INTERSTATE MEDICAL JOURNAL.

Vol. XVI. JUNE, 1909. No. 6.

EDITORIAL.

ON THE ADVANTAGES OF SELF-CONTROL.

The historians of our mental habits, guided somewhat by the unphilosophic sense that makes much of what is far from normal, are prone in their works to dwell at too great length upon what they conceive as of paramount interest to the public. Their expositions of mental states are at one with other unrestrained writings, and though much may be said in praise on the grounds of patient endeavor, persevering observation, and analytic research, the lessons culled by the reader are not imbued with the thought which should be deepest in his mind. This thought is a very important matter, for out of it may arise a point of view quite new and one that has the power to readjust conditions to such an extent that the possibilities of the normal mental state, as a working factor in our modern life, will be duly appreciated. And to further this thought is not only a commendable act, but a very necessary one, since by its dissemination a balance may be struck between the normal and the abnormal.

That this may be accomplished without much laboriousness on the writer's part, and also without a grasp of plan that is inclusive of all the universals, has not been instanced so many times before that a new reading, conceived in the calm of an enviable moderation, should receive but passing notice. Just what an unobtrusive message of sterling worth may stand for as a stimulus to ideas which are dominant in the making of mental dignity, is well instanced in Dr. Paul Dubois's book, "L'Education de Soi-Même," recently translated into English*; for in eloquent but restrained language is put forth the sort of philosophy that ought to make a decided appeal to all those medical men who have thoroughly emancipated themselves from the shackles of a past which made light of the insistent truths of preventive medicine. In reality, born of self-

*Self-control and How to Secure It. By Dr. Paul Dubois, Professor of Neuropathology in the University of Berne. Funk & Wagnalls Co., New York and London. 1909.

control is the issuance of the conception of the fitness and value of certain views of the philosophy of life, that at present are of paramount importance in the unmistakable warfare which all doctors are waging against the presence of morbid manifestations that arise through a fancied inability, on the part of thousands of people, to obey the sane laws which always act as protective measures against exuberances and extravagances eventuating in what is properly called disease.

If any age really needs the ballast that is the happy outcome of self-control, it is surely the age we live in; and if any special branch of the human family, more than any other, needs the beneficent offices which are supposed to flow therefrom, it is that large section which has lost the strength of its will-power by virtue of its egoistic estimate of the importance of minor ailments. No greater proof of this can be found than in the prosperity of the many spiritual healing societies, that garner their lucrative harvest from all those who have allowed their imaginary defects of a nervous sort, to magnify themselves into incubi that sit astride them, despite the counsel of their physicians, and which are only raised by the intercession of the novelty of a religious frenzy. These mental disturbances, of which the various healing societies glibly speak as diseases of sufficient gravity to baffle all the ramifications of science and, by reason of this, are grist to their ever-grinding mills, would not attract the attention they do to-day were some sort of intellectual thumbscrew fastened on vagaries, the abetting of whose import means an ever-increasing supply of material for all the bastard sciences outside medicine.

But self-control has other applicabilities, and to mention only one that concerns us most, it should convey to the consciousness of all normally sensitive members of the medical profession, its advantages as an asset in the many trying situations which somehow fall oftener to the lot of doctors than to that of other men. The plea often advanced, that doctors are a class apart from other men, in so far as their very science and its application in the sick-room and hospitals prevents their conduct from assuming the privileges of other normal men, has cast the wrong halo around a profession that to-day needs none of the retrograde medievalism, which until quite recently was, in part, gratuitously bestowed upon it by a public ever-enamored of mysterious phenomena and, in part, by those antiquated leading lights in the profession itself, who made considerable capital out of an aloofness that was not the result of intellectuality, but was sedulously fostered to prevent any ordinary person from peeping into so sacrosanct a science, lest such familiarity would deprive the science of its almost supernal dignity. But with the advent and promulgation of preventive medicine, the science was fortunately divested of all its cumbrous wrappings, and the light that thenceforth played upon it was the

beneficent light that clears away obscurities. Now, not only has medicine itself, on account of this welcome uprooting from the choking tares of a foolishly-limited state, been decidedly benefited, but the average doctor has been brought into juxtaposition with the many social problems that must go far in making him desirous of being something more than the enviable master of the art of the composite pill. And by virtue of his new social function, his temper, not always of the best, will be assaulted in no mistakable manner, for the irrepressible inquisitiveness of certain constituents of the general public will display in his presence an insatiability for medical knowledge that may undo his not too nicely adjusted equanimity. And here self-control will be most effective, for by its assumption his dignity will be sustained and his powers for doing good extended. But any lapse from mental serenity will surely be counted against him, and be classed with the rather despicable qualities of weakness and faultiness; and the harm done will be much more than personal, since the consensus of opinion will have it that the medical temper is so unmodern in its inadaptability to the conditions which at present obtain, that to speak of an alliance between medical thought and the thought outside the hierarchy of this special science, is as far removed to-day as when the thongs of medievalism bound it down until its inertness was its real badge of infamy.

THE VAGRANCY EVIL.

Some of the Eastern States are now taking the first steps in the direction of a scientific treatment of idlers and vagabonds, although we are fully a quarter century behind certain European nations in this matter. It is rather remarkable that the medical profession has taken so little interest in these defectives, and permitted the growth of a popular opinion that they are subjects for discipline and not medical treatment. Perhaps it is not too late to put our house in order and prevent an accusation of neglect of duty.

The pathologic basis of vagrancy seems to have been entirely overlooked in the recent discussions, although the facts have been known for many years and repeatedly published. This part of the army of unemployed is not at work because they can't work. Healthy men do not submit to such terrible privations and sufferings, nor do the vicious. Tramps are sick men, some so inefficient that all labor is impossible, but the vast majority are able to work intermittently for short periods when they become exhausted again. It is a diseased condition which resembles the normal state of savages, and though investigators have

generally used the blanket term "neurasthenia," there is ample evidence that the sufferers are not all neurasthenic and should be differentiated into other classes with a view of curing them. It is a medical question which must be solved by the medical profession very soon, for the evil consequences of neglect are now appalling. Vagrants are causing losses of millions of dollars, by railroad accidents, and an enormous amount of crime has been laid to them, for it is a mere step from vagrancy to crime.

The causes of the vagrant's condition are as numerous as the strains of civilization,—strains which drive them to primitive methods of existence or parasitism. Of course there is usually a congenital neurotic basis, derived from parents who should not have had offspring, and the condition has also been exaggerated by underfeeding and bad living in childhood, but the determining causes have been the constant nagging strains which they did not know how to avoid. Unfitness to the climate is one of them, for there is a disconcertingly large number of native born hoboes,—some of very old families, too. The foreign born citizen is generally a steady worker. Another recently discovered fact is the large number whose early calling required prolonged near work of the eyes, and from what we know of the nervous wreckage from eye-strain, it is reasonable to assume refractive errors whose correction would have prevented the collapse. Type-setters were formerly noted for their inability to keep at work, and a large number became intermittent tramps. The eye-strain in this calling is pre-eminently severe. Some vagrants began as truants who could not stand the eye-strain of the school-room. Indeed in the susceptible, everything which constantly strains the nervous system, is a cause of that restlessness which prohibits steady labor. It has been said that the prostitute is the female counterpart of the criminal, but she is just as apt to be like the hobo—unfit to labor for a living.

The sole cure for the vagrants is confinement as a patient in an institution, where physicians will treat his evident physical disabilities, and prescribe only such labor as will build up the nervous system and not exhaust it—appropriate nourishment being the main reliance as a matter of course. When a case recovers he should be released but kept in view for a possible relapse, the incurable being permanently deprived of liberty. Where tried in Europe this plan is completely successful and moreover the institutions are almost if not entirely self-supporting, through their farms and factories. The institutions are neither "workhouses" nor "poor-farms" for paupers, but hospitals for the sick, to prevent pauperism. American communities are afraid to try it because of the initial expense, and each tries to drive hoboes to neighboring towns,

by making local conditions too severe for endurance. Perhaps it would be best to have the States bear the expense, but it would be a saving in the long run. The railroads could afford to contribute or be taxed $25,000,000 annually to establish and maintain these hospitals as that is their annual loss due to tramps. The prevention of crime would warrant an equal amount in taxes for it is an increasing menace to society.

Present methods of treating vagrants only increase their disease. Hard labor of course exhausts them, and is as criminal as it would be to put into a treadmill a nervous woman requiring Mitchell's rest cure. It is foolish to expect them to labor without the nerve force—making bricks without straw. Yet labor is the only suggestion ever made, and is soberly tried as a deterrent—making him work so hard for the State that he would rather work less for himself. It always fails, of course, and he moves on to a more tolerant community. Though they need the best kind of nourishment, one judge recently tried to "cure" them by a bread and water diet for 30 days. Indiscriminate charity makes them worse, and the "bread-lines" should be prohibited, and these hungry idlers sent to the hospital for vagrants—the asylum for those unfit for civilization where they can at least help to support themselves. It might be considered utopian to expect a time when there are no beggars or tramps, but that ideal is already attained by these modern medical methods in parts of Europe even more crowded than we are. The time is surely coming when every man who can not produce evidence that he is self supporting will go to the institution for vagrants. Beggars should disappear for they are generally the worst kinds of frauds, and beggary itself should be sufficient warrant to confine the culprit.

PRACTICE AND PREACHING.

Every little while some lay journal publishes a reproving lecture to the whole medical profession on the alleged inconsistency of not practicing the advice given to patients, and the old, old story is retold as to no physician ever taking his own medicine. As a matter of fact, unnecessary drugging is one of the ever present dangers against which physicians must guard themselves. When one is surrounded by medicines it requires considerable self control to abstain from taking some to relieve a symptom which will disappear of itself, and as a class it is quite likely that doctors do take medicines more often than they should, even those therapeutic nihilists who are able to hold their practice while telling many of their patients how to cure themselves by removing the causes of their diseases and refusing to prescribe drugs. Some years

ago it was announced that a higher percentage of physicians became addicted to morphine than in any other calling—and if true the reason is self evident.

The last complaint is to the effect that few physicians sleep with the bed-room windows wide open as though they were afraid of doing what all laymen are told is essential for health. One ingenious reporter has even gone to the trouble of making night visits to the homes of physicians and was considerably shocked to find that in every case the windows were tightly closed, and not even a crack left for ventilation. He was unable to realize that there might be method in such madness, but he would learn soon enough not to sleep in a cold room, if several times every bitter night he had to answer a telephone, and had no protection except his toga flapping in the breeze. And then if he had to dress once or twice every night to answer a hurry call, he would find that though doctors may advise a patient to sleep in a cold room, they do not countenance the dangers of dressing in one. In other words the pleasure and benefit of sleeping in cold air is one of the many things the general practitioner must forego, because of dangers which do not exist in the case of patients who can stay in bed all night and dress leisurely in a warmed room in the morning. It is merely one of the many hardships of the life.

People will persist in calling a physician at his meal time, so that he eats irregularly, often in haste and rushes out on a hurry call when he should be at rest. A whole night in bed is a luxury which many a physician does not get for weeks at a time. After visiting those patients who must be kept in warm rooms, he becomes covered with perspiration and must brave inclemencies of the weather to make his next call, whether he takes cold or not. His life is unhygienic from end to end, and he cannot help it. The only wonder is that he lives as long as he does, and that he has the bravery to keep on when he knows he is shortening his own life. Sick folks rarely if ever understand the inroads they make upon the physician's vitality. Then the worries! They alone are enough to account for the neurasthenias which are said to afflict us unduly. This can be prevented but the physician does not take his own advice simply because he cannot and continue to practice his profession.

The reluctance to undergo an operation is quite natural. We instinctively remember all the few dangers and failures and are apt to forget the hundreds and thousands who have been cured. We remember the one who has died under an anesthetic and forget the tens of thousands who lived. Consequently as years go on, the dangers loom up bigger and bigger and it is no wonder that we hesitate to subject ourselves to that which we have so often used to save the lives of others.

There is no doubt that many a physician shortens his life by postponing necessary operations. Perhaps this is inevitable and must be accepted as another of the risks of the calling in the same way that the locomotive engineer accepts the risks of tabes, neurasthenia and trauma. That is, they are occupation diseases. If we avoided the risks of contracting contagious diseases none of us could practice a day. There are also frequent references to the physician's use of alcohol and tobacco in amounts which are considered harmful. Of course there are many who conscientiously abstain from both and preach their harmfulness, but until it is proved just what is excess and until it is also proved that in less amounts there is no benefit, the profession at large cannot be accused of inconsistency if it smokes and drinks like a gentleman. Perhaps indeed we have been too prone to cut off an elderly patient's pipe and toddy when it is not necessary to abstain and few of us realize how hard it is to stop the habits of a life time. If we did allow them more often, we might not be accused of inconsistency when we use them ourselves.

THE RED CROSS SOCIETIES.

All nations are beginning to realize that a well organized efficient Red Cross society is an essential of civilization, not only in war but in peace as well. In times of local disasters, the community is helpless as the machinery of local government is temporarily wrecked, and there must be a movable machine which can be hurried to the spot to render "first aid" while the authorities are reorganizing. It is a species of life and property insurance without which there are enormous preventable losses. There also is a large element of charity to be sure, but it is far more than that, for it is a necessary part of the great law of "mutual aid" upon which modern society is wholly dependent. Survival is far more certain, if men give aid in a manner which may eventually aid themselves. The nation as a whole also suffers when any of its parts meets with a loss, and it is merely national self-preservation to organize relief machinery which can be utilized by any part afflicted.

When war occurs it is unexpected by the mass of people, so that timely preparations are never made. Indeed the costs of being always ready for war are so great as to be prohibitive, and no democratic nation will permit its government to go to that expense. The machinery of war is then always insufficient at first, time being required for organization, and it is during this period that it is necessary for the people to do voluntarily certain things which their governmental machinery is not expected or designed to do. It is here that the local Red Cross

societies step to the front and accomplish with local resources the things out of reach of the central authority. These well-known facts have quite naturally led to a complete reorganization of our National Red Cross in close touch, indeed interwoven, with the Federal Government whose officials are represented in the guiding and controlling center. Its first work was the organization of State branches whose main end at present should be the organization of local city, and county sub-branches for the collection of funds and materials when the occasions arise. Independence is wholly out of question, for the central body alone can tell each sub-branch, what is needed. Otherwise there is the inevitable suffering from the omission of essentials and there is also dreadful waste from the duplication of supplies. Indeed charity unorganized always oversteps itself, by its very profusion of riches, as it wastes resources needed elsewhere and tempts the less moral elements to pilfer. Vast unneeded sums of money are subscribed and wasted but the surplus could be returned to donors, if sent to the central treasury. Organization means economy as well as efficiency.

In war time, of course, the army medical authorities are the only ones who will know what is needed and where. At present this branch of the service is insufficient even for times of peace for the present small army, but the plans for its future increase contemplate the full utilization of the resources of the Red Cross the members of which are thus really volunteering in peace for the necessary work of war. In no other way is it possible to uphold the Army Medical Department, and prevent the scandals of the past. Unhappily, the ordinary citizen never fully realizes his public duties. We are all too prone to look after our own affairs and let others look after themselves, never thinking that in times of disasters we are doomed beforehand if every one acts this way. Self preservation demands that we perform voluntary public duties in a way which makes it possible for others to help us. We therefore bespeak a careful consideration of the needs of a very extensive Red Cross organization, for which everyone should do his share. All who can afford any time at all should become active members to organize the efforts of others. There are already thirty odd State branches and should be more, so that every part of the country will be in touch with the central body, to give and receive. An enormous amount of work can be done in time of peace, in the way of teaching how to help those made helpless by sudden disaster—and this work alone extends all the way from medical aid lectures to instruction in the management of property and money. It is a work which receives our hearty approval not only because it is charity but because it helps national prosperity and even preservation.

LITERARY NOTES.

Dr. Chouquet, assistant surgeon in the French colonial troops, contributes to a recent number of the *Annales de Médecine coloniale* a highly interesting article on the curious practices attaching to popular medicine in Gaudaloupe. For instance, for earache, irrespective of the causation of the disturbance, some drops of ordinary oil, into which an earthworm has been thrown and which has been brought to the boiling point, are dropped into the external auditory canal. This remedy is considered sovereign. The dung of the rat converted into a watery infusion, filtered and then sweetened with honey and flavored with rum, is an incomparable remedy in all cases of uterine colic during menstruation. Just as the Egyptians regarded the cat with a degree of veneration unknown in other countries, the Gaudaloupeans almost deify the rat. And that the rat problem, showing the channels of communication between the rat and man in the propagation of trichinosis and plague, has not yet convulsed the unscientific temper of the natives, the following anecdote illustrates: "In case anyone is so indiscreet as to walk barefooted across a hard wood floor, the grave complications both of mind and body which so foolish a performance surely invite, can be obviated only by eating that very same night a number of pieces of rat meat." Now the natural æstheticism of the people is so well developed that though the eating of rat meat is obligatory in circumstances which might incur the vengeance of the evil spirit, it is not regarded with any show of abhorrence in happier conditions, since even the presence of a goodly amount of this choice viand in a fricassee of chicken or lamb, does not arouse righteous anger, but is devoured with a gusto that must arise from an unusual appreciation of the supernal qualities this advanced civilization attributes to the brown rat (Mus norvegicus) or the less savage black rat (Mus rattus).

In his new book "The Neuroses," Dr. Pierre Janet, professor of psychology at the Collège de France, has added a volume to his numerous publications, which should be of special interest to all neurologists. As is known throughout the medical world, Dr. Janet has made this subject his own by the indisputable rights of twenty years of unremitting investigation, and an output of many brochures which surely must attest to his deep and varied interest in the shaping of a general synthesis of these affections. The third chapter, entitled "The hysterical mental state," should come in for the closest attention on the part of the reader. The author begins by describing the fundamental character of those hysterical phenomena which are known to every doctor; then deducts their psychologic laws, and finally states his "medical" method in arriving at the various definitions of hysteria. In Brachet's volume, published in

1847, fifteen varieties were mentioned, but this number is now increased to twenty; and though much might be said against so large a number, the good point in its favor is that the neurologist is free to make his choice. With all the wealth of his usual logic, the author shows how incomplete and unsatisfactory are the definitions based on anatomy, physiology and clinical observations. Again, in the hysteria which is said to be produced by suggestion, this factor is a matter of minor importance, since the development of this sort of hysteria results from an emotional disturbance following laws which can be readily studied. To consider this matter otherwise is, according to Dr. Janet, an attempt to muddle it by the introduction of a puerile psychology.

In his learned treatise on the consequences of the ablation of the ovaries (Les Conséquences de l'ablation des ovaires chez la femme. Thèse de Lyon) M. P. Ferry gives an historical account of castration in the male and female. The ablation of the male and female sexual glands was practiced in the dawn of antiquity, and according to D'Ollican (Traité des eunuques de 1707) the earliest interferences took place 2,000 years before the Christian era. The first woman to have her ovaries removed was Semiramis, queen of Assyria, and wife of Ninus (XIIIth century B. C.). Profane history and the Holy Scripture mention a large number of persons of both sexes who had their sexual glands removed. According to Alexander Severus they constituted a third sex (tertium hominum genus); Juvenal calls them "semivires;" Lucan, "unnatural monsters;" and Ovid compares them with the dessicated trunks of decayed trees. Vossius (Etymologicon linguæ latinæ) was of the opinion that the Persians were the first to indulge in the practice of castration; hence the Latin word "spado" from the Persian town, Spada, where the first castrations known to history were supposed to have taken place. The truth of this assertion appears dubious since the first eunuch of whom mention is made in any writing, figures in the Bible. This distinction belongs to Potiphar, the Egyptian general, who bought Joseph from the Ishmaelites, and whose wife, on account of her husband's defect, played a rather unconventional part in Joseph's early career. Though ablation of the sexual glands in man was repeatedly done in antiquity, its frequency may be attributed to the simplicity of the operation. On the other hand, what must not have been the obstacles, some 2,000 years ago, to ovariotomy, when even to-day the operation is not the easiest procedure in surgery! But students of this interesting chapter in medical history should not overlook the fact that what we understand as ovariotomy was not the operation in vogue among the Oriental people. Thus, with the Kreophagians, castration consisted of excision of the labia minora and the clitoris.

ORIGINAL ARTICLES.

THE DEVELOPMENT OF MILK LABORATORIES IN CONNECTION WITH THE DISPENSING OF FOOD STUFFS.*

By Thomas Morgan Rotch, M. D., of Boston.

A food is a substance which, when taken into the living organism, is capable of building up or repairing tissue, or yielding energy, or both. In this sense we have to deal with, in our care of the health of human beings, certain food stuffs which represent all that makes up the various combinations of required food and is recognized as being practically sufficient for life. Food acts according to what each class of food stuff can accomplish. That is, as to whether, as a class, these food stuffs provide means for keeping up the animal heat, or in repairing waste. In these respects the food indicated in early life does not differ from that for later life. In early life, however, a greater amount of building up of the tissues in proportion to the breaking down is needed, than is the case in adults, where these two factors of the problem of life should practically be equalized.

Milk represents a complete food, for growth, repair, and for caloric energy. Milk, however, does not contain all the variations of each food stuff. For instance in the class of carbohydrates represented by starch. It does, however, contain certain variations, or stages of change of all the food stuffs, and all the variations requisite for the first year of life.

Certain functions of digestion and absorption are not developed in the first year of life, and hence to bridge over this stage of undeveloped though developing functions milk provides more or less predigested food stuffs. For instance, lactose, in the sense of one of the food stuffs, sugar, represents a predigested starch. In saying this, however, I should explain that in the process of digestion starch is converted first into maltose and then into dextrose, while lactose is converted at once into dextrose. In this way the end results are the same, but the digestion is relieved from having to deal with starch as such at all.

A milk laboratory should be a place where all variations of food stuffs, which are required for early life and most of those for the abnormal conditions of later life, can be obtained. In specific cases, es-

*A paper read before the Boston Obstetrical Society, February 16, 1909.

pecially, certain organisms should be kept ready for use in the laboratory. As an example of this the lactic acid bacillus can be kept in pure culture, ready for immediate use, in the laboratories according as the physician wishes to prescribe it. I wish, however, to especially draw the attention of physicians to the possibility of what use a perfected milk laboratory can be put to, and how desirable it is to apply the same principles of percentage feeding, which have been proved to be so valuable in the treatment of early life, to the many instances, especially in convalescence and in gastro-enteric disturbances which so frequently arise in adult life.

A great opportunity is also open to us for dealing with the dietetics of the second year of life by applying the advanced laboratory principles of percentage combinations in connection with a caloric basis for the administration of food. Some of the advances which have been made in the treatment of milk and the practical carrying out of the laws of physiological chemistry, which have emanated from the milk laboratories, may be stated as follows:

1. The institution of percentage feeding.
2. The proof that a finely adjusted range of the various food stuffs, fats, carbohydrates, and proteids, can be obtained in exact percentages and combinations of percentages.
3. A mechanical instrument of precision by which percentages can be mechanically adjusted for prescription purposes.
4. A clear statement of what combinations of percentages of food stuffs can be obtained with high or low percentages of individual food stuffs, which includes the necessity of high or low fat percentage creams.
5. The possibility of prescribing a divided total proteid.
6. The combinations which can be used of whey proteids and casein, of exact high or low percentages.
7. The practical application of alkalies to obtain specific results.
8. The practical use of the lactic acid bacillus, either for digestive purposes, or for the combating of actual disease.
9. The experimental successful results of producing a definite lactic acid coagulum fine enough to pass through a nipple readily.
10. A milk sufficiently free from bacteria to practically do away with Pasteurization, especially for long distance transportation.
11. The example shown to the public of to what perfection a model milk farm, where with medical scientific precision and unstinted provision of funds to carry out the finest details relating to the preservation and dispensing of hygienically protected cattle and milk products, can be carried out.

Witness the costly farm plants at Plainsboro, New Jersey, at Charles River, Massachusetts, and at Burnside, Baltimore. I have already in a previous article explained the reasons for, and the variations in, the use of the different food stuffs which stand as laboratory products and as

shown in Table 1. It is very evident, therefore, that we should intelligently acquire a knowledge, *first,* of what products can be obtained from the laboratories; *second,* how and to what extent these products can be used; *third,* what are the indications for their use.

The following table shows the representative examples of all food stuffs which can be obtained in the milk laboratories of the present day and also impresses on us how many advances have been made directly through the scientific work of these laboratories, and the laboratory investigations of the skilled dieticians connected with the laboratories. The principles of physiological chemistry have, in these laboratories, a fair field for actual practical use, and it now remains for us physicians to make use of the opportunities thus given to us, and to clinically prove which of these supposed principles are correct, and which illusive. It is also fair to note, from a philanthropic and humanitarian point of view, the good work which, as life-saving institutions, these milk laboratories are doing, not only for the rich but for the poor. Witness the thousands of quarts of milk which are yearly sent to the deserving poor from the milk laboratories at actual cost, or with only nominal profit to the laboratories, and sometimes at an actual loss, as seen in the deliveries of percentage prescriptions to the hosptials.

TABLE 1.

Food stuffs to be obtained in the milk laboratories.

Fat, varieties	Fat obtained from different species of cows. Fat for easy digestibility from containing a large proportion of the stable glycerides rather than of the volatile glycerides. Fat obtained by gravity. Fat obtained by centrifugal separation.
Carbohydrates, varities:	Lactose. Maltose. Sucrose. Glucose. Dextrose. Starch. Dextrinized starch.
Proteids	Whey proteids. Casein. Peptonized.
Micro-organisms	Lactic acid bacillus, Bulgaricus.

We must consider the digestive tract as an ideal incubator which may be used either for the favorable or unfavorable development of bacteriological, chemical and physiological changes which may take place, particularly in the proteid constituents of the food stuffs. This fact has been brought out forcibly in the admirable work of C. A. Herter on "Bacterial Infections of the Digestive Tract."

In this connection we are in a position to say that in accordance with the exhaustive work of North and others concerning the antagonism which exists between different forms of bacteria and particularly between the lactic acid bacteria and some of the putrefactive and pathogenic species, that the Bulgarian lactic acid bacillus has been found to be the most virile and efficient of the lactic acid organisms thus far studied, though the strain isolated by Dunn has also proved most effective. This microörganism under favorable circumstances displaces all other forms of organisms, benign, especially fermental, and in some cases pathogenic.

With the present limited knowledge which we have of this matter and with the insufficient means which are at our disposal for detecting various abnormalities of digestion, we have a very difficult problem to solve. We must, however, on entering into this discussion and in attempting to tabulate this limited knowledge, first be on our guard not to really create a food digestive weakness by an unwise use of the different food stuffs. If the individual digestion was carefully studied from the very beginning and the proper percentage of each element of the food intelligently adapted to it, we should not in most cases meet with what have been called idiosyncrasies of digestion. These so-called idiosyncrasies, on the contrary, really represent over and over again merely normal variations.

It is exceedingly uncommon, if a young baby from the very beginning of its life is fed by laboratory methods, and with the precision which can be obtained from the food stuffs in the laboratories as supplied from the laboratory farms and by one who is really an expert in infant feeding, to have disturbances appear. These disturbances usually arise in cases where the digestion has manifestly been tampered with by unwise and in that sense unintelligent food prescriptions. If high percentages are begun with at once or in wrong combinations there will undoubtedly result gastro-enteric disturbance, no matter whether such percentage combinations represent what we suppose are the proper caloric equivalents or not.

I should, therefore, say that whether we are dealing with a new-born infant, in which case the problem is an easy one and trouble seldom arises, or with a digestion already disturbed by unwise percentage combinations, we should invariably begin with low percentages, such as 1% fat, 5% lactose, .25% whey proteid and .15% casein. Watching carefully the effect of these percentages we should then gradually increase them. We should be sure, however, and not get above a reasonably high per cent. even in what is evidently a strong digestive capability. Herein lies the danger of over-taxing even a strong digestion and although certain digestions will resist and possibly thrive on this over-supply of food stuff, yet as a rule most cases will finally succumb to what are really unnatural conditions, and in the long run much useless harm will be done to the majority of infantile digestions.

If we always keep a little under rather than over what has in the hands of the best feeders been proved to be the top limit of the percentages of the various food stuffs, namely 4% fat, 7% lactose, and 3% or 3.50% proteid, the best results will be obtained in the substitute feeding of infants. It is unreasonable to go above these somewhat empyrical, but from the widest experience practical and sensible percentages, unless we are treating some special conditions where a high percentage of one of the elements of the food is evidently indicated. These latter classes of cases, however, are rarely met with and a much more advanced knowledge of infantile dietetics and much greater intelligence are required to deal with them successfully. The most careful study and mature judgment is also called for in deciding on the time and in gradually making the proper changes when we wish to wean the infant from the divided proteid, which has arrived at a whey proteid of .80% and a casein of 1.15% to an undivided proteid which should never, on a conservative basis, be started on a total proteid of over 1%.

The practical means of using the various food stuffs spoken of in Table 1 have already been described in my article in the *Archives of Pediatrics,* September, 1908, on "Modern Laboratory Feeding and the Wide Range of Resources Which it Provides." In that article I have explained the action of alkalies and starches on the proteids; the relative value of the carbohydrates; the relative meaning of the different qualities of fats, with the different reasons for making use of them in various ways; and the lactic acid bacillus, whether for purposes of digestion, or for combating intestinal fermentation. I shall now take up the third proposition, spoken of above, namely, what are the indications for the use of the various food stuffs provided by laboratory products. To intelligently approach this subject, however, we must appreciate that the digestive function for all food stuffs varies in health and in disease. In this sense we meet with a great variety of conditions in which varying percentages of all the food stuffs, from low to high, are indicated. This is in accordance with the weak or strong developmental capabilities of the individual human being whom we are attempting to feed. In this sense we have to treat the various food functions of an individual taking into consideration any decided idiosyncrasy in one direction or another which may result in what is designated as a weak or strong fat digestion, sugar digestion, starch digestion, or proteid digestion. As a corollary to this we must use every means in our power to determine whether one or all of these conditions are present before we can intelligently decide upon what percentage treatment is indicated in the especial case. In fact, as I have said over and over again, the food in its caloric value, percentages and combinations of percentages must be adapted to the especial infant's digestion. There is no one ideal combination of percentages which we can use and follow as a royal road leading to a successful feeding.

If an infant is not gaining in weight, but is having normal movements and no evident signs of indigestion, such as vomiting or

distention or pain from gas, the probability is that the food is too low in one or more of its percentages—probably the fat,—and in consequence its caloric value is too low. It must be remembered that indigestion in the milk fed infant does not depend upon the fact that the food is milk, but upon improper combinations of ill-advised percentages of the food stuffs which make up the especial modification used. It is, as a rule, therefore, the fault of the physician who writes the prescription rather than of the milk laboratory which supplies what is called for.

When, after employing the usual percentages, which in ordinary normal digestions have been found to suit certain groups of development, we have decided that we have to deal with an infant's digestion, which is weak in certain of the food stuffs, whether fat, lactose, or proteids, we should then begin to minimize that especial food stuff in our food prescription. When we minimize we reduce just so much the value of the caloric equivalent of the food and its nutritive capacity. We should, therefore, in order to guard the nutrition of the infant, increase the nutrition and heat energy of the food by increasing the percentage of the other food stuffs mentioned in the prescription, carefully doing this in the case of the remaining food stuff or stuffs which we find the especial individual can easily digest. In this way we intelligently combine and make use of percentage methods and include caloric values.

The question of the symptomatology of the gastro-enteric tract in connection with its functional and digestive side is an exceedingly complex one. Vomiting as a symptom, and in fact almost the only symptom which in most cases suggests functional disturbance of the stomach, is in its turn not an entirely characteristic gastric symptom. It is now well-known that disturbances of the intestinal tract whether from organic or functional causes may produce reflex vomiting without a disturbance which could be called gastric, occuring in the stomach. In a general way an excess of fat beyond the capability of the individual fat digestion is prone to cause vomiting, a distaste for food, rather loose discharges and at first pronounced yellow and later greenish yellow movements which contain an excess of fat and small, fine, yellowish white masses of fat simulating at times the curds of casein, but easily differentiated chemically. Excess of sugar often shows tympanites from gas and resulting abdominal pains, an odor of lactic acid fermentation in the breath, and greenish, sour or acid movements with little or no odor. Excess of proteids shows as a result vomiting of casein curds, pain, green and white movements with curds more or less large and tough of casein, and frequently a marked odor, more or less foul, according to the kind or degree of the fermentative processes going on and whether there is much albuminous decomposition.

The supposition in these cases is that when acid fermentation with its supposedly sour odor is present a reduction of the percentage of sugar is indicated. Yet when all is said we are not yet in a position to state positively, and without reservation, that these distinctions are sufficiently

proved to form a clear and definite symptomatology and we must look to physiological chemistry, in the future, to give us the true symptomatology of functional gastro-enteric disturbances, by showing which of the intestinal secretions are increased, decreased, or changed and also the exact composition of the fæcal discharges as affected by functional disturbances. The detection of and the differentiation of the various functional disturbances of the gastro-enteric tract both in regard to each other and to their separation from organic conditions, is rendered still more complex and difficult when we consider that early life presents especially difficult and misleading symptoms and signs.

TABLE 2.

GASTRIC SYMPTOMS.

	VOMITING	PAIN	ODOR OF BREATH	VOMITUS	GAS	URINE
Fats	+	—	Usually no odor. In extreme cases odor of butyric acid (rancid butter)	Soft flakes of fat	0	0
Sugar	—	—	When present due to lactic acid (sour)	Soft Curds	No odor. Due to carbon dioxide. The sugar is changed to lactic acid and then to carbon dioxide and hydrogen, which are without odor	0
Proteids	+	+	—	Tough Curds	—	0

ENTERIC SYMPTOMS.

	DIARRHŒA	PAIN	ODOR	COLOR	CURDS	GAS	URINE
Fats	+	0	0	Mixed Green and Yellowish White	+	0	0
Sugar	—	—	Sour from lactic acid fermentation	Greenish acid reaction	0	0	Sugar, and might show temporary albuminuria
Proteids	—	+	+ foul albuminous decomposition	Mixed	+	+	Indol Skatol Purin

+ means present or marked; — means absent or insignificant; 0 means absent.

The intestinal contents so far as mucus and blood or lack of membrane are concerned, are very illusive for diagnosis. Membrane may be present in intestinal lesions and yet not appear in the fæcal discharges. Mucus may be present simply from mechanical irritation or from nervous influences. Blood may appear in the fæcal discharges and yet no perceptible organic lesions be present.

I have endeavored to give in tabular form what we really, so far, do know of the indications which suggest to us the status of an individual's fat, sugar, or proteid digestive capability. I have made this table as simple as possible with the hope that it may aid those who wish to intelligently and practically feed young infants by first carefully diagnosticating their especial gastro-enteric condition. These recognizable conditions, few in number though they at present may be, yet constitute a nucleus around which we may build a greater and greater circle of phsiological and chemical discoveries and facts until we are in a position to state a rational method for making a differential diagnosis of functional gastro-enteric conditions as we are in the more perfected symptomatology of organic diseases.

The signs and symptoms of functional gastro-enteric conditions in the digestive disturbances of early life, with special reference to showing the effect produced by the different food stuffs when in excess.

A CASE OF BENCE JONES ALBUMOSURIA ACCOMPANYING MYELOID SARCOMA OF THE HUMERUS CO-INCIDENT WITH TRAUMA.*

By Geo. W. Calé, Jr., M. D.,
Clinical Professor of Surgery in Washington University, St. Louis.

In 1847, Henry Bence Jones, of London, reported to the Royal Society that in November, 1845, he had examined a specimen of urine, referred to him by Dr. Watson, which contained a thick yellow semisolid substance. The urine was of a high specific gravity and showed some variations in its coagulability. On account of the peculiar reaction shown after the addition of nitric acid and the application of heat, Jones was induced to investigate the nature of this substance more carefully and came to the conclusion that it was not an albumin, but an albumose. The clinical history and details of this case were published by MacIntyre in 1850, and after post-mortem it was thought that the man had died of osteomalacia fragilis rubra, the disease having affected the ribs and vertebrae. The affected bones were so soft that they could easily be cut through with a knife, the diseased parts being somewhat granular and of a reddish gray color.

Attention was not called to this unusual urinary phenomenon again until 1883 when Kühne published a report of his examination of some urine made in 1869, in which he found this peculiar substance which is called Bence Jones albumose. In about nine months after his examination the patient died and diagnosis of osteomalacia was made, no post-mortem being held.

The next to report a case were Kahler and Huppert; their diagnosis was osteomalacia, the urine showing the Bence Jones reaction, but upon the death of the case the post-mortem revealed multiple round cell sarcoma of the bone marrow.

Observation of this condition in bone disease was very rare, for from 1847 to 1897 only four cases were reported. Up to date about thirty-five cases of Bence Jones albumosuria, associated with myeloma, of bones, have been reported.

It has never been found in multiple carcinoma of bones, although several investigators have looked for it.

The time of appearance of the albumose is usually before the disease of the bone is recognized. Stokvis, however, reports a case in which the albumose did not appear until late in the course of the disease and disappeared sometime before the death of the patient.

*Read before the St. Louis Surgical Club, April 14, 1909.

It has been found in quantities varying from .25% to 6.9%. The exact nature of the substance is not known. All investigators agree that it is similar to but still differs from the known digestive proteoses.

Welch believes that the cases of bone tumors in which Bence Jones albumose is present are not true tumors in the Cohnheim sense, but are of the nature of granuloma.

In the vast majority of cases reported the tumors have been multiple, a number of bones being affected simultaneously.

FIG. 1. a—head of bone. b—small piece of undestroyed bone.

Albumose, giving the Bence Jones reaction, has been found by Coriat in pleuritic effusion, while in this case it was absent from the urine.

Boston considers the reaction which is most reliable to be that with lead acetate and caustic soda for the detection of sulphur. Many chemists report that loosely combined sulphur is a pre-eminent feature which distinguishes Bence Jones albumose from other albumoses.

The most prominent characteristic of the Bence Jones albumose is its coagulability at or near 50° C.; the slower the heat is applied to the test tube the heavier the precipitate. The point of coagulability is much below that of serum albumin or egg albumin, and is the reason attention was first called to the peculiar urine of the case to be reported.

In the true sense the albumose is not coagulated by heat and acids, but rather precipitated, for upon boiling the precipitate disappears or is redissolved and reappears as the liquid cools.

FIG. 2. Soft parts of arm removed, showing destruction of bone (b) shown in Fig. 1.

A precipitate is formed upon the addition of cold nitric acid to urine containing this substance which is redissolved on boiling and reappears when the liquid is cooled. Similar results are obtained with hydrochloric and sulphuric acids.

If acid urine is neutralized with sodium or ammonia no precipitation results.

If acetic acid be added to the urine, heat will not precipitate the albumose.

If a saturated solution of sodium chloride be added to the urine which contains acid, complete precipitation will take place on heating, but in this instance the precipitate is not redissolved upon boiling.

If alcohol be added to the urine in the proportion of two to one, precipitation occurs; this precipitate is insoluble.

Picric acid produces a precipitate which does not dissolve upon boiling.

Formalin added to the urine produces at first a very slight cloudiness, but upon standing a heavy precipitate occurs.

Saturation of the urine with magnesium sulphate causes no change, but upon the addition of acetic acid a heavy precipitate is thrown down.

The biuret reaction (caustic soda and copper sulphate in weak solution) is positive, producing a rose-pink and violet color.

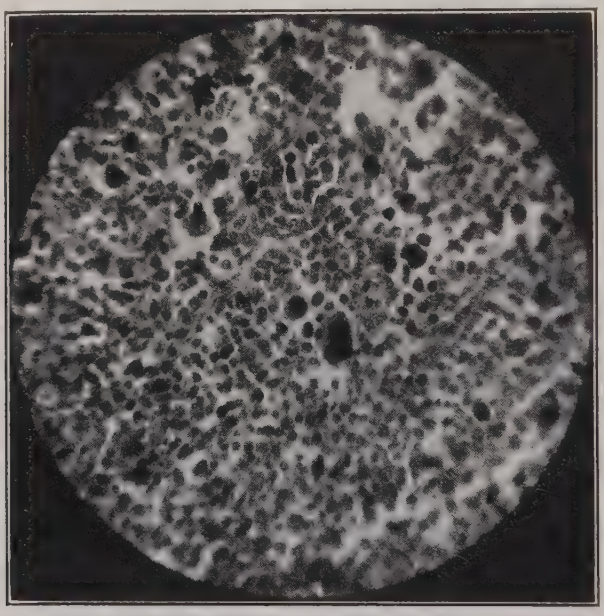


FIG. 3. Myeloid Sarcoma, showing giant cells (x 245).

Bence Jones albumose differs from proto-albumose and hetero-albumose in that it is not completely precipitated with sodium chloride in neutral solution. It resembles hetero-albumose in that it is precipitated on addition of acetic acid after saturation with sodium chloride or magnesium sulphate, but differs from it in being precipitated at a lower temperature. (Boston.)

It should not be confused with the secondary albumoses so frequently found in the urine of the febrile and septic diseases, the reaction of these albumoses being different from those of the Bence Jones substance.

Secondary albumoses do not precipitate upon boiling nor on saturation with sodium chloride, when the reaction of the urine is neutral, but if

acetic acid be added to the urine, saturated with sodium chloride, precipitation occurs.

Simon—*Amer. Jour. Med. Sciences,* 1902—gives a summary of twenty-two cases of Bence Jones albumose occurring in multiple myelona. A diagnosis of osteomalacia was made in Jones' first case, but it is probable that the disease in reality was myeloma.

After an exhaustive study of the subject, Simon concluded:

First, that the presence of the substance in the urine of man usually indicates the existence of multiple new growths affecting the bones, and generally myeloma.

Second, that myeloma may apparently occur in the absence of the peculiar albuminous substance.

Third, that the existence of the urinary condition in association with other diseases without involvement of the bones is not as yet proved by the report of any case in which a careful post-mortem examination has been made.

Fourth, that malignant disease of the bones, in general, may exist in the absence of the Bence Jones albumin from the urine.

Little is known of the origin of Bence Jones albumose. It has been found in the blood of patients suffering from multiple myeloma, and also in the tumor itself. Urine containing large amounts of the Bence Jones albumose, unless containing the albumin of nephritis, shows no tube casts, nor kidney cells; neither are there any of the physical signs of nephritis, such as dyspnea, edema of the extremities or eyelids, or heart complications, etc. There is usually a marked degree of anemia present.

Only one of the cases enumerated by Simon was operated upon, the other investigations being clinical, post-mortem, or both.

The case in question is one in which the Bence Jones albumose was recognized almost simultaneously with the bone disease which was discovered by means of the *x*-ray.

Our attention was first called to the presence of albumose by its precipitation at a low degree of heat, and the presence of a pinkish froth in the tube. The precipitate, which was very heavy, was redissolved upon boiling. The specific gravity of the urine was high and it contained no casts or other organic cellular matter.

Urinalysis—24 hour specimen—80 ounces—no sediment:

Specific gravity	1020
Acid.	
No casts nor other organic cellular matter.	
Albumose	1.54%
Albumin	.06%

Blood examination:

Hemoglobin	85%
Red blood corpuscles	7,200,000
White blood corpuscles	18,125

Pressure:

Systolic	140 m.m.
Dyastolic	88 m.m.

The patient is a man of 50 years of age, large and powerfully built, and of good family history. At 30 years of age, he had pneumonia; in 1901 yellow fever, and on several occasions has had slight attacks of rheumatism and malaria. About one year ago he had a slight injury to his hand, for which he was treated by his local doctor. At that time an examination of his urine showed that it contained a large quantity of "albumin."

The patient has noticed that for the past two years his urine was very frothy when voided, although he made no mention of this to his physician.

Less than a year ago, I am told, the patient was examined for life insurance and accepted as a first-class risk.

During the fore part of October, 1908, he was assisting in jacking up a derailed car to put it back on the track. The jack slipped, the handle striking the patient on the left arm about the insertion of the deltoid muscle. The man experienced considerable pain, which lasted until the next morning when his arm was put in a splint by a local physician, who made a diagnosis of fracture. At the end of seven weeks the splint was removed and the patient was able to move his arm so well that he planned to return to his work—that of locomotive engineer. About this time he was making some repairs in his house and in moving a stove he slipped on the floor and in an effort to balance himself gave his arm a severe jerk which caused him great pain for about ten minutes. This did not subside completely and the arm became swollen and in a short time almost useless. The swelling became more pronounced and on December 22d, 1908, he came under our care in Saint Louis, stating that he had sustained a fracture seven weeks previous. No evidence of fracture could be made out on physical examination and on December 24th, 1908, a radiograph was made which showed the left humerus in good condition and no evidence of a fracture. The entire extremity was edematous and it was not possible for him to use it without causing him great pain, the pain being more pronounced along the course of the musculo-spiral nerve.

About the middle of February, 1909, the patient developed a typical case of facial erysipelas. He was sent to the contagious ward, given a few doses of antistreptococcus serum, and was well again in about ten days, having suffered very little inconvenience during the time.

On March 4th, 1909, examination of the arm showed that there was some movement in the humerus and a radiograph disclosed complete loss of bone from a point one inch below the head of the bone, extending downward about four inches; the balance of the bone showed very plainly on the plate and appeared to be in normal condition. What was equivalent to a pathological fracture had occurred, the entire bone having

been destroyed by the growth. A diagnosis of myelo-sarcoma was made and on March 22d, 1909, the arm was amputated at the shoulder joint. The tumor occupied almost the upper half of the bone and the upper third of the shaft was entirely destroyed, being indistinguishable from the medulla, its place being occupied by a soft, grayish, gelatinous mass which extended up into the head of the bone.

Microscopic examination proved the case to be a giant-cell sarcoma.

The patient made a nice recovery and left for his home seventeen days after the operation.

Several very careful examinations of the patient were made in order to detect, if possible, any other bone involvement, but these examinations were negative.

The patient's urine was examined daily from the time of his operation until he left but it contained about the same amount of Bence Jones albumose as before the operation.

It will be interesting to observe whether this substance continues in the urine or whether in time it will disappear.

From the history of the case, we believe that the albuminous substance found by his physician a year ago was in fact Bence Jones albumose.

The case is peculiar in the apparent long existence of the albumose before the appearance of the bone disease and in there being only one bone involved.

It is also remarkable that such complete destruction should have taken place in about two months, for the radiograph shows that on December 24th, 1908, the bone was in practically normal condition.

The patient was disposed to attribute the trouble to his injury sustained in October, 1908, but I am inclined to believe it was rather coincidental, or at the most a slightly contributing cause, inasmuch as the albumose was apparently present for a long time before the development of the myeloma. Had the nature of the growth been periostal sarcomatous, then we would have had better ground for giving the injury as the cause of the growth.

This is the second case which has been recognized and come to operation, the other case operated upon being reported by Ewald, who removed the right clavicle—it being the seat of a myeloma; the other cases being inoperable on account of the number of bones involved.

DIET AS A PROPHYLACTIC AND THERAPEUTIC.

By H. W. Wiley, M. D., of Washington, D. C.

There is an increasing belief in the medical profession, and this belief is founded on substantial evidence, that diet is an important factor in the production and cure of disease. Both the words "production" and "cure" are used here in their ordinary sense, meaning as aids to, or favorable to, and not as possessing specific properties of production or effacement. By reason of the provisions of the Food and Drugs Act the term "cure" is now somewhat restricted in its applications. The common practice of advertisers of patent or proprietary medicines in the past was to advertise them as a "cure" or "sure cure" or "infallible cure" for various diseases, and also to place similar statements on the labels. Since the law was enacted forbidding the use of a statement which was false or misleading in any particular, and especially since the courts have judged that the word "cure," in the strict sense of that term, may not be applied to a remedy or medicine, less use is made of the word. For this reason I have used the term above in the restricted sense of establishing favorable conditions whereby the natural removal of the disease might take place, rather than as exerting a specific influence in the removal of the disease and the restoration of the diseased organ to a state of health. I propose to eliminate from the present discussion the well-known effects of adulterated or debased foods in the promotion of disease, and shall confine myself in the main to the influence of nutritious, palatable, wholesome, and clean foods, both as a preventive and as a remedy.

If we accept the modern theory of specific infection in the etiology of disease, we should also accept its attendant theories, which may be briefly stated as follows: A perfectly healthy, well nourished organ becomes infected with any disease germ with great difficulty; in other words it is self protective. I shall not enter here into any details concerning this theory, but only state it briefly. Granting this, therefore, it is self evident that the food or diet must play a most important part in the prevention of disease. The normal condition of the body, or any organ of the body, and hence its maximum power to protect itself against infection, is directly dependent upon the character and the amount of the diet. It follows then as a necessary conclusion that the debasement of the diet, the addition of injurious substances thereto, or the abstraction of valuable ingredients therefrom,

*Read at the Annual Meeting of the American Therapeutic Society, New Haven, Conn., May 6-8, 1909.

diminishes the power of that diet to maintain the body in a state of hygienic equilibrium. Hence, the normal condition follows when foods are furnished of a proper quality, assuming as a basis of the discussion that such foods shall not be so manipulated as to incorporate with them an ingredient injurious to health; to take from them any quantity of their nourishing properties which would unbalance their nutritive value; or to treat them in any manner so as to impair their power to sustain life.

The second condition regarding diet as a prophylactic is its quantity. It will be easily understood from the above assumption of the basis of discussion that the proper quantity of food to maintain the equilibrium is a condition of efficiency. If less food than is necessary be ingested the body must lose a portion of its sustenance and a part of its ability to withstand infection. On the contrary, if a larger quantity of food is ingested than is necessary, an additional burden is placed upon the organs of digestion in ridding the body of the excess, or of storing the excess of nutriment in some form, usually that of fat, in the tissues of the body. Either condition must be regarded as unfavorable to complete prophylaxis, and hence either a deficiency or an excess of food would to that extent predispose to diseases of the kind mentioned. It is, of course, understood that these variations within ordinary limits are not of any appreciable effect. If on one day a person should eat a little less food than necessary for normal nutrition, and on the next eat a little more, varying in this way from time to time, no appreciable effect would be noticed. On the other hand, the person who continuously uses less food than is necessary, or one who continuously uses more than is necessary, must to that extent become more obnoxious to disease. In the second place, assuming that the total quantity of the food remains the same, any marked and continuous change in the relations of its natural constituents must be looked upon with suspicion.

The normal food of man, and of other animals as far as that is concerned, may be divided into five great classes, namely, protein, fat, sugar (starch, etc.), minerals, and waste or indigestible portions. Each of these constituents has a useful function and the sum of nutrition is the normal ingestion of all of these ingredients in their usual proportions. Here again it must be acknowledged that slight variations in distribution of ingredients may take place without any notable injury, just as is the case with the variation of total amount of nutrients. But if one essential ingredient to which the human body is accustomed, and on which it has been developed to its present state of normal equilibrium, should be persistently removed from the food, in my opinion the ultimate power of resistance to disease of mankind would be diminished. It is well known, for instance, that a diet of protein alone will speedily lead not only to danger of infection, but also to positive weakness and starvation. In like manner a diet of carbohydrates alone would result in the same condition, and this is true of a diet of fat, or a diet of

the mineral constituents, or a diet of the waste constituents. I take it as a proposition very difficult to disprove, and sustained by every principle of analogy and reasoning, that the ordinary normal diet of man, selected by the necessities of nutrition and by taste, is considered all in all the best. To illustrate more particularly, I heard the Surgeon General of the Japanese Navy, in a lecture in Washington about two years ago, ascribe the disease known as beri-beri to a carbohydrate diet. Rice being one of the principal foods of the Japanese, and almost the only food of the poor, the Surgeon General ascribed the prevalence of beri-beri among the Japanese, especially the Japanese sailors, solely to the use of that diet. On the other hand it has been thought that scurvy is a disease due largely to the elimination from the dietary of the vegetables that are eaten in the normal condition of nutrition. These two illustrations, which are more or less founded upon observation and scientific investigation, I think may be accepted as at least indicative of what might be expected should any usual elements of the diet be either increased or decreased proportionately to the other elements.

Among other statements which have been made in this line by most eminent men, and those whose scientific learning and judgment we all respect, is the one that the normal diet of man, especially in the United States, contains too large a percentage of protein. Data have been collected in an experimental way which tend to show that a diminution in the amount of protein in the food leads to very beneficial results, increasing the strength and endurance of the subjects experimented upon. It is true that this conclusion has also been questioned by high scientific authority, and so we may regard it at the present time as neither established nor disproved by scientific data. Applying the principle of analogy to this condition of affairs, we may properly ask if a diet so low in protein should be continued for a long period of time, whether some notable injury would not be done to the human body which would render it more obnoxious to disease. In fact, might we not expect an approach to that condition of affairs already alluded to in the case of the beri-beri of the Japanese sailors? Might not there be other effects also not immediately noticeable which would render the general introduction of a diet into the United States containing, for instance, only half as much protein as that already consumed, dangerous to the general health of the community? I ask this without in the least calling into question the fact that the actual amount of protein which we consume may be greater than is desirable. In that case we should expect that the human body would be subject to other diseases, especially of those organs which are called upon particularly to excrete the protein, or its decomposition products, from the body. In other words if, for the sake of illustration, and the figures are somewhat exaggerated, we should assume that the normal, healthy man of the United States at the present day consumes 20 grams of nitrogen per day in the form

of protein and the man under the proposed regime only ten grams, would the new order of affairs produce a race of men less subject to disease than the present one? We might all admit that the reduction of the quantity of nitrogen from 20 to 18 grams might be desirable, but would not be inclined to go to the extreme of supposing that it should be diminished by one-half or two-thirds, or even more.

I need hardly refer here to another question in respect of wholesome foods in their relations to health, namely, that of mastication. I believe that all admit the desirability of mastication, both as a mechanical necessity preliminary to deglutition and also preliminary to the proper mechanical state for the first steps of hydrolysis in the process of digestion. This having been properly accomplished, the question may arise whether or not the carrying of mastication to excess might result, first, in diminishing the actual quantity of food necessary, and, second, in actually interfering with the proper process of digestion. Since the beginning of the human race, and before, the sense of hunger has been the normal gauge of the quantity of food ingested, and I think it must be admitted, if we believe in the principles of evolution, that this sense of hunger has fixed properly the quantity of food necessary. We need not discuss those abnormal cases where the natural sense of hunger leads to over-eating, or where its absence leads to under-eating, but I speak only of the average normal condition. I believe it may be accepted that excessive mastication, therefore, would tend to satisfy the sense of hunger with a less quantity of food than is needed in normal conditions. Let me put the case a little differently: Normal man must masticate his food in such a manner that it can be easily swallowed, and this fits it for the ordinary process of digestion. If a man should excessively chew his food it seems to me that it is almost certain that a less quantity of it would satisfy his craving. In other words, a man who gives his whole attention to mastication must necessarily in a short time lose the sense of hunger—in a much shorter time, in so far as the quantity of food is concerned, than he would otherwise. Hence, while it is perfectly easy of demonstration that a somewhat more extensive degree of comminution of the food may be desirable, it does not hold that it should be carried to extremes; or, putting it another way, speed of digestion is not to be regarded as synonymous with nutritive digestion. I think it may be easily understood that just the contrary would be the case. Suppose, for the sake of argument, that mastication could be continued until the food was reduced to its molecular condition. Such food, we might assume, would be digested almost instantaneously, but if the absorbent system remains in its present condition it would be quite impossible for that food to enter the circulation in an instantaneous manner. Much of it would necessarily, in the natural motion of the intestinal organs, soon pass beyond the region of absorption and escape entering into the nutritive processes entirely. Thus I venture to ask the question whether it may not be possible that excessive mastication, that is, converting the

meal hour into a mere mechanical exercise, may not in the end threaten the human family with grave dangers of insufficient nutrition? I ask this question without in the least denying the principle that mastication is a desirable and necessary process.

I come now to the second part of the discussion, that is, a condition where disease has already become established. What, now, is the function of food respecting its therapeutic value? Every physician recognizes the necessity of sustaining to the utmost the vegetative functions of the body in disease. Disease, as it usually is found, may be defined as that condition of metabolism in which katabolism is more active than anabolism. In another sense the contrary is true, and the excessive production of tissue, especially of adipose tissue, is in some respects just as much a disease as the loss of weight, which we usually associate with most diseases. In my opinion, the disease which results in hypertrophy may, as a rule, be entirely controlled by diminishing the amount of the diet, unless it has gone so far as to be practically irremediable. The excess of activity of anabolism is associated very frequently with advancing years. The habit of eating becomes fixed in childhood, youth and manhood, that is during the period of growth and maximum activity of life. When senectitude approaches, if the habit of eating remains unchanged, larger quantities of food are ingested than are required for the new conditions that attend incipient old age. There is thus an accumulation of tissues which may become of a character conditioned upon an actual derangement of nutrition. On the other hand the condition usually found in disease is the activity of katabolism. The moment the temperature of the body rises above the normal, katabolism gains the ascendency. This is based upon the plain laws of thermodynamics. The waste of tissue which is the attendant of disease often becomes so great as to threaten and even actually cause the death of the patient. To combat this condition and stimulate anabolism, food of a proper kind is one of the most valuable of the armaments of the physician. But in this condition we have an entire change of relations. The natural desire for food usually has passed away. The character and activity of the digestive ferments are changed. There is often actual disease of the digestive organs themselves, and when not actually diseased their activity is so impaired by the disease of other organs that they cannot be treated as in the case of health. Hence the use of food in disease is regulated by entirely different conditions from the use of it in health. I may say that the introduction of drugs of any description into foods that are intended for invalids is not only undesirable, but, in my opinion, criminal. Let me illustrate this by a simple statement: Among all the foods that are proposed for conditions of disease, there is none so valued as milk. The value of sweet milk as a food, even in a state of health, depends largely upon its purity and freshness, and in a state of disease these two qualities are absolutely imperative. The healthy man may use considerable quantities of milk that contains

millions of organisms per cubic centimeter, or milk dosed with formaldehyde, boric acid, benzoate of soda or other preservative, and receive no apparent injury; but the case is entirely different with the invalid. The ingestion of even minute quantities of these bodies, or of old milk not yet sour, may, and probably does induce positive injury. Even pasteurized milk may be undesirable, especially in the case of infants, as has been illustrated by the reports of many physicians. The healthy adult, in my opinion, can drink pasteurized milk with impunity, provided the milk was good when pasteurized and did not need pasteurizing, but the same good milk, pasteurized and used in a state of disease might be open to serious objections. Another illustration: Physicians often prescribe fresh fruit juices for invalids and convalescents. The fresh juices of the apple and of the grape are those usually employed. About a year ago Judge Morrow, of the Federal Court of San Francisco, came to my office on his way home from Germany. While there his physician had advised him to drink fresh, pasteurized apple juice, and he had done so with great benefit. He came to see me to ask where he could get fresh, pasteurized, unchemicalized apple juice in this country. I reluctantly told him that I did not know; that my experience in buying fresh apple juices on the market had led me to believe that they were almost universally dosed with some antiseptic, either salicylic acid, benzoate of soda, or sulphurous acid. He said his physician had told him to avoid all such mixtures. At the present date, however, I can say that matters have improved very much. Large quantities of fresh apple juice and fresh grape juices are now placed upon the markets without the addition of any chemical whatever, and they are preserved in a much more palatable and much more salable state than ever before. This is illustrated by a letter I have recently received from a manufacturer of fresh grape juice at Sandusky, Ohio, which is as follows:

"Sandusky, Ohio, March 25, 1909.

"We wish to state that the three barrels of Grape Juice which you and our Mr. Appel had sealed last October kept in first-class condition, as did also our entire output, and we are pleased to advise you that with the exception of a small stock of sulphur Grape Juice still on hand, which we are placing in a limited section of territory, that we have withdrawn the sale of Sulphur Juice altogether from the market, and are now offering nothing but the Absolutely Pure Article."

The first requisite which we should make for foods for invalids is that they should be pure. The next most important thing is to find a pure food that the invalid can digest. You cannot nourish an invalid *vi et armis*. You must find out what he can eat and give him that, whatever it may be, and if the digestive organs themselves are diseased, a greater care must be exercised. Very often sick people have an irreconcilable antipathy to articles of which when they are well they are frequently very fond, and this idiosyncrasy of the invalid must be respected by the physician. It has frequently been observed in cases of low nutri-

tion that sour milk, or kumiss, may be taken with relish and with benefit when other forms of food seem to be rejected. I am not a protagonist of the belief of Metchnikoff that sour milk is the elixir of life. A theory of this kind would have to be demonstrated, and it would take a hundred years to demonstrate it. But even from theoretical considerations the theory does not appeal to me, and I am not going to discuss it here. In my limited experience at the bedside of the sick, as physician or friend, I have seen some excellent results from the use of kumiss. In my opinion the physicians of this country should undertake to promote the production of a pure kumiss, and I do not mean by that that it shall be made of mare's milk as it originally was, nor do I use the word in the strict sense of the Food and Drugs Act—I mean good milk fermented in a bottle, or in other words "lacteal champagne." This is only mentioned, however, as one of the things that might be more properly prescribed in conditions where inanition is often a greater danger than the disease itself, and here I am led, in the kindest of spirits, to remark that the science of nutrition is unfortunately not very extensively included in the curricula of our medical schools.

I must also be allowed to say that the most preposterous dicta that I have ever heard concerning diet have come not from teachers of dietetics and cooking but from physicians themselves. In the progress of medical education the near future, in my opinion, will see the professorship of dietetics in a medical school advanced to the same rank as that of medicine, and I am even going further than this and say that the practice of medicine in the future will be largely a practice of dietetics.

I have the greatest faith in the future of prophylactic medicine and perhaps the day will come when the physician will be paid in proportion to the effectiveness of prophylaxis. While it is true that diet is only one of the factors in prophylaxis, as well as in therapeutics, it is, in my opinion, one of the most potent factors; and undoubtedly a symposium, such as that of to-day, in which all the various points of view relating to diet are prominently brought out, cannot fail of doing effective work for good.

LICHEN PLANUS, A GENERAL SYSTEMIC DISEASE. REPORT OF FOUR CASES OCCURRING IN TWO FAMILIES.

By M. F. Engman, M. D., and W. H. Mook, M. D., of St. Louis.

Lichen planus is considered by the majority of observers as a disease closely associated in its manifestations with the nervous system, on account of the nervous phenomena usually accompanying it, and which exhibit themselves as attacks of shivering, intense pruritus, feeling of nervousness, sleeplessness, etc.

The relation of lichen planus to the nervous system is indeed an interesting question and forces upon one, who has contemplated the subject at all, the two hypotheses: First, is lichen planus primarily a disease of the nervous system; or, secondly, is it an eruption due to the action of some chemical formed within the body through the processes of metabolism, or by general infection of some unknown microörganism?

It would be interesting to discuss these two propositions cursorily before we give the history of the cases that form the subject of the paper.

I. Is lichen planus primarily a disease of the nervous system? In favor of this hypothesis we have the various nervous phenomena which precede and accompany the disease. They usually occur in the form of chilly sensations, shivering, intense irritability to noises, light and heat, lassitude, sleeplessness, which are usually increased in intensity after the appearance of the eruption. In other instances they appear shortly before or after the appearance of the eruption. No one has seen an acute outbreak of lichen planus without being impressed with the clinical truth of this statement. The patients seem to be in an agony of nervous irritability for the relief of which powerful drugs are required. It is obvious that the irritability is not due to the intense pruritus, since we see other pruritic diseases in which the nervous symptoms are much less pronounced. For instance, in universal eczema and in dermatitis exfoliativa, where we have a far more acute active inflammatory disturbance in the skin, the nervous symptoms are much less intense. Again, in pemphigus and in dermatitis herpetiformis, they are not so pronounced. The only lesion of the skin causing such symptoms as those seen in acute lichen planus, are conditions where the integument has been destroyed in large areas by heat or chemicals.

Cases have been reported where the disease has occurred after a nervous shock, and are cited by authorities in support of the nerve hypothesis, as in the following: Case I. M. E. W., age 25, a ticket agent in a traveling show. On a certain day in May the patient was very much frightened by a cyclone which almost demolished the tent in

which his company was performing. The next day he noticed that his lips were whitened and felt as if they had been burned. A week after, a few lesions of lichen planus appeared on the palm of the right hand. Within a short time the whole surface of the body became generally involved. This patient had a severe attack of lichen planus which occurred not only upon the skin, but in the mouth and throat. The lips were very much crusted and had the appearance of being chapped. The patient had a marked intention tremor and felt exceedingly ill, when he made his appearance for treatment. This case would naturally be ascribed to the nervous shock occasioned by the cyclone, yet upon further inquiry he admitted that he was not in good condition for sometime previous to the occurrence of the storm.

The fact that a period of a lowered condition of health may precede the shock is often omitted. One of the patients which we report below, attributes her lichen planus to a shock occasioned during the terrible cyclone which visited St. Louis in 1896. On the other hand, Unna is under the impression that the irritation of the nervous system is a secondary symptom, due directly to the skin disease, and he further remarks that the disease can gradually disturb the general health of the patient; a disturbance which is more considerable in individuals already of a nervous temperament.

The linear, zoster-form and metameric distribution of the lesions of lichen planus have been brought forward as a point in favor of its nervous origin. Such forms of distribution, however, we see in certain curious cases of syphilis, and in eczema, diseases in which the eruptive phenomena probably have no primary etiological connection with the nervous system.

The beneficial results produced in lichen planus by certain therapeutic medication, almost convince one of the fact that the nervous and skin symptoms are both due to some specific cause, which the drug neutralizes or destroys. Injections of bichloride of mercury in large and increasing doses, such as one would employ in an active syphilis, produce such rapid and beneficial results that the effect of the drug here can only be compared to its action in syphilis, in which disease we know that all of the symptoms are due to a specific cause. In lichen planus, the administration of mercury in sufficient doses relieves the nervous phenomena before its action is marked upon the eruption. The following two cases, in which the nervous phenomena were most marked, are good illustrations of the specific action of mercury: Case II. Mrs. A. D., age 54. Diagnosis, lichen planus. When this patient appeared for treatment, she had not slept for several nights, and was subject to attacks of shivering, during which her teeth chattered; and this was accompanied by a feeling of what she expressed as "nervous excitability." She had had the disease for four months. The eruption was scattered over the body generally, with the exception of the face and hands. The itching was intense and came in paroxysms. The patient was put to

bed and an injection of one-tenth of a grain of bichloride of mercury was given daily. The subjective symptoms were relieved at once, and in one month from the day of her admittance to the hospital she was discharged cured. Case III. Mrs. W. S., aged 40. Diagnosis, lichen planus. The patient had been sick for some months, previous to the appearance of the eruption, with a colitis and proctitis. She had been in bed for the last two weeks, during which time she had received no relief from attacks of nervous anxiety, sleeplessness, and intense and terrible pruritus. The eruption was very acute, composed of thickly distributed acuminate papules, red at the base, which were scattered more or less over the whole of the integument. In certain areas the plane papule was typical and characteristic. When the patient arose from her bed, she was dizzy and trembled so much that she was hardly able to coördinate her movements, which was not due to loss of strength, as she was not very much weakened. Bichloride of mercury injections were begun at once, commencing with one-tenth of a grain, which promptly relieved all of the symptoms, especially the nervous phenomena, allowing the patient sleep and relief from the terrible periodical attacks of nervousness.

The cases thus briefly cited are examples of the fulminating acute types of the diseases, in which the nervous phenomena are the most marked, yet their relief by intramuscular injections of mercury is almost as pronounced as the action of salicylates in rheumatism. In the more chronic types of the disease, the action of bichloride is not so dramatic.

Fordyce, in a report upon the post-mortem findings in a fatal case of lichen planus, finds no evidence to confirm the supposed nerve origin of the disease, but rather that it is due to some toxin in the blood.

II. Is lichen planus a disease due to a toxin of metabolic or microbic origin? Brocq says: "We have a nervous system involved by toxic influence acting on the nerves, like the shivering which people regard as the first sign of a chill; this nervous depression is often the first suggestion of the action of the disease." He says further that many of the symptoms of the disease bear out this conception of a toxic casual influence, but that sufficient evidence has not been brought forward to lead us to believe that the disease is due to a definite microbic influence.

That lichen planus is constitutional, in that other tissues besides the skin are affected, we must admit, since a critical analysis of the literature and examination of a number of well-taken histories will force this conclusion. If lichen planus be a constitutional disease, in which the principal manifestations seem to be exhibited on the skin, we have an explanation of most of the phenomena observed in the disease: 1st, the mild arthritic complications; 2d, the periods of ill health preceding or accompanying the disease; 3rd, the nervous phenomena; 4th, the intestinal and bladder symptoms, which not infrequently precede or accompany the eruption. In Case III cited, this eruption was preceded for some months by colitis and proctitis, which were cured by mercury

injections. The following case is an example of the disease complicated by bladder disturbances. Case IV. Mrs. E. Aged 60. Diagnosis, lichen planus. Mrs. E. had had several attacks of lichen planus, the former ones having been treated with arsenic. During each attack she has had some intestinal disturbance and, particularly, painful micturition. One of us saw the patient during her last attack, which was accompanied by the usual intestinal and bladder complications which were completely and promptly relieved by the internal administration of protoiodide of mercury. 5th, the appearance of lesions in moniliform bands, following scratch marks, as reported by Kaposi and others; the appearance of lesions after bites of insects; scratches of animals; scratches of pins, or at points of dermal irritation, we see in all constitutional or general diseases, in which eruptive phenomena on the skin is a prominent symptom, as for example in syphilis and smallpox. 6th, the occurrence of lesions in the mouth, in the urethra (Huess) and probably in the bladder and intestinal canal.

Whether the constitutional condition which causes the disease is due to a specific microörganism or to some so-called toxic metabolic disturbance within the system, is impossible at present to decide. However, there are many facts and incidents occurring in the course of the disease which strikingly remind one of its similarity to known infectious constitutional processes, particularly to that of syphilis. The eruption of syphilis is usually preceded by certain well-known constitutional disturbances. In the majority of instances, however, as we see syphilis to-day, the constitutional symptoms are of such mild character that they are frequently overlooked, the patient's notice being attracted to their condition only by the appearance of the eruption. In others we have profound disturbances, in the form of high temperature, headache, anemia, etc. In syphilis, after the outbreak of the acute symptoms, patches are left which are resistant to treatment, and in certain cases relapses are frequent after several years, in spite of treatment. It is striking in this respect to take the histories of cases of lichen planus as we see them. Some patients, in whom the eruption was preceded by a long period of ill health, appear to suffer profoundly; others, in which the eruption was the first sign of the disease. Arsenic and mercury act as specifics in the majority of instances, but often fail to prevent a relapse, and we see these relapses more often in lichen planus than we do in syphilis, probably because the patients are not usually instructed to continue with their treatment after the disappearance of the eruption. Again in syphilis, the specific eruption is not infrequently preceded by urticaria and other types of the erythema group, showing that the organism causing the disease is disturbing the economy. The following case is apropos in its striking analogy: *Case V.* Miss A. W., aged 50. Diagnosis, lichen planus. The patient had had attacks of eruptions on the skin, off and on, for years, which had been diagnosed as eczema. At the present time she appears with a pruritus of the legs, accom-

panied by slight redness and swelling; the swelling was so great that the tops of the shoes could not be laced. Behind the knees there was a great deal of pruritis, but no eruption is to be seen there. She was given various lotions and rest, which did not relieve the itching. The patient felt ill, had no appetite, was extremely nervous, and complained of a constant headache. Four days after her first visit she appeared with a well-marked erythema multiforme of the legs and forearms, which continued for one week, during which time the patient, feeling very weak and miserable, was put to bed and kept there for ten days. She became weaker, lost weight rapidly, was sleepless and intensely nervous. One month and twelve days after her first visit, an eruption of small red acuminate papules appeared on the chest and the flexor side of the forearms. A fortnight after the disappearance of the erythema, some of the red acuminate papules gradually evolved themselves into the typical plane papules of lichen planus, at last giving us a diagnosis in explanation of the patient's condition. She was immediately placed on protoiodide of mercury, which was followed by the rapid subsidence of all symptoms. Three weeks after the diagnosis was made, the patient was virtually well. She had regained flesh, color, appetite and her nervous tone was restored. The edema of the legs had also promptly disappeared. This patient remained away without treatment for two months, when she again appeared feeling tired and in a somewhat similar condition in which she had been before her former attack. She was again placed upon protoiodide, and was promptly relieved of all symptoms. This case is cited to suggest that the erythematous eruption is similar to the rash that often precedes acute specific infections.

The lesion of lichen planus is almost a type of granuloma. The small mononuclear cells, characteristic of the disease, whatever they may be, first form in the lymph spaces around the papillary vessels. The toxic influence, whatever it is, does not produce a plasma cell, as in syphilis, but cells of a somewhat similar type, which rapidly increase until the upper portion of the derma becomes edematous and succulent. The fluid in the derma is forced into the epidermis through the intercellular channels, thus enlarging these spaces and breaking many of the prickles. As in all other processes, in which the epidermis is bathed by fluid and rests upon a soft succulent derma, acanthosis results. Through the proliferation of the prickle cells of the epidermis, the thickening and dipping down of the inter-papillary rete pegs, the rapid increase of the cellular elements of the derma, and the typical lichen planus cells, we have the formation of a papule. This papule may result in the restitution of the tissue to its normal condition, leaving slight or marked pigmentation; or, involution of its central portion may occur, with a peripheral extension, forming the so-called circinate lesion of the disease; or, the papule may become absorbed, leaving in its place scar tissue, the so-called atrophic type of the disease.

The epidermis covering the papule may become markedly active and thickened, forming the hypertrophic papule, the *lichen corné* of Vidal. If there is an afflux of serum from the vessels, accompanied by vascular irritability, bullæ may readily form on some lesions. The lichen papule, according to the peculiarities of the individual, the location and the reaction of the individual's tissues to the toxin, may be acuminate, plane or obtuse in their forms, these being dependent upon the extent of the cite involved. In the syphilis papule, the essential feature of the lesion is the formation of plasma cells about the vessels, which we now know is due to the pale spirocheta. This papule may be of various sizes and types. It may undergo central involution and form a ring; it may extend proliferally; the papules usually occur in close proximity to one another and form a group; and again, the papule may become absorbed, leaving the skin of the individual in its normal condition. The epidermis over the papule may become acanthotic and vesicular, if there is much effusion from the vessels, causing the so-called seborrhoic papule. The syphilitic papules may occur in streaks or patches in the mouth, very analogous to the lesions of lichen planus of the mucous membrane. The initial lesion of syphilis precedes the eruption for some weeks, and is somewhat analogous in certain instances to an initial lesion in lichen planus, that sometimes precedes the general eruption for months.

The evidence given above suggests, that lichen planus is due to some constitutional disturbances which might be caused by some infectious microbic agent. It has occurred to many that lichen planus was an infectious disease, although Brocq says that the microbic nature of lichen planus has been almost universally abandoned. He cites the bacillus described by Lassar as a possible etiological factor that has not been confirmed. Numerous observers have reported the occurrence of two or more cases in one family. Jadassohn, Keyes, Hamacker, Lustgarten, Ledermann, Heidengsfeld, are cited by Brocq. Beltmann, in the discussion of the etiology of lichen planus, believes that the glandular enlargements, enlargement of the spleen, involvement of the mucous membrane, the clinical history, together with the constitutional symptoms, point to an infectious origin of the disease. He reports a brother and sister both affected, while in another case a brother was said to have a similar affection, which he also values as of etiological importance. Hallopeau and Lemierre report two cases of lichen planus exclusively on cicatrix, and think that the infectious agent usually enters through the glandular orifices of the skin; but in these particular instances, the cicatrix offered culture media for the development of the disease. Hallopeau makes a similar remark in a report of a case of lichen planus occurring with impetigo. Morel-Lavaillée reports cases of lichen planus occurring in husband and wife. In the discussion of these cases, Sabouraud remarks that he had never observed an example of contagion in lichen planus. Hallopeau, in reporting the evolution of the circinate

lichen planus lesion from an initial placque, thinks that such a process points to its parasiticity and to the analogy between lichen planus and pityriasis-rosea, mycosis-fungoides, as it presents an initial incubation period from an initial lesion. Brocq, in discussing this case of Hallopeau remarks that lichen planus is the reaction of the skin suffering under the influence of some irritation, as similarly ascribed by Jacquet (one of the first to suggest its nervous origin), or, to some parasitic influence. Hallopeau, replying to this discussion, said that the disposition which one observes in lichen planus, as in syphilis, to the formation of corymbose lesions, is a point in favor of the parasitic origin of the disease. (Danlos also reports the formation of corymbose lichen planus.) Omerod, in a discussion of lichen planus, observed that he had a patient affected with lichen planus who stated that his mother and sister were affected with the same disease.

The following cases, four very striking ones, have come under our observation. *Case VI.* (See Fig. 1) Mrs. D. N., aged 30, came to the St. Louis Skin and Cancer Hospital for treatment on March 21st, 1907, service of Dr. Keber, by whose courtesy we have the privilege of reporting this case. Diagnosis, hypertrophic lichen planus. The woman had had the disease for two months. Left hand, thumb and forearm were involved. The lesions consisted of small plane papules, arranged in lines, and coalesced in places to form a patch, with a few discrete outlying papules. The patient stated that she had had the same trouble and lesions twelve years ago, when it was more extensive. She was put upon mercury internally, and on the 20th of May was dismissed, cured. She returned on the 5th of August with relapse on index finger and thumb. *Case VII.* (See Fig. 2) R. N., boy, aged 2 years. Diagnosis, lichen planus. Was brought to the St. Louis Skin and Cancer Hospital by his mother (Case VI.) April 13, 1908. The eruption began ten days ago on the right side of the buttocks in the form of large patches. The lesions are typical of those of lichen planus, being of the small plane type, and are scattered in small patches over the entire body. The eruption has a tendency to group, and consists of flat top umbilicated, plane papules. The mother was exceedingly worried about the child, and readily recognized that he had the same disease as herself, and suggested the possibility of her having infected the child, as she was nursing it when she was suffering from the same affection, three months previously. The eruption in the child readily subsided under inunctions of mercurial ointment. *Case VIII.* Mrs. H., aged 37, appeared for treatment April 11th, 1907, private case. Diagnosis, hypertrophic lichen planus. The patient had lichen planus about ten years ago, when it remained three or four years and disappeared. Three years ago it broke out in numerous places on the arms and legs. First attack followed shock from cyclone, as mentioned in an early part of this report. The case proved an exceedingly stubborn one and did not recover until the following November. She remained free from it for several months

Case VI. Fig. 1. Hypertrophic lichen planus.

Case VII. Fig. 2. Lichen planus.

and then suffered a relapse. *Case IX.* (Private.) Miss H. (daughter of Case VIII.), aged 16, appeared for treatment February 10, 1909. Diagnosis, acute lichen planus. In October the patient received a burn from lye on the left wrist. There was no formation of bullæ, but the skin became red and thickened. The burn did not heal and after a few weeks small, shiny "lumps" (papules) appeared on its surface. About a month ago these began to spread around the burnt patch, involving the arm and hand; similar lesions appeared on the other arm, back of the neck and ankles. The lesions then began to itch. At her visit, the area mentioned, namely, both forearms and hand, was dotted by typical lichen planus lesions, the principle ones of which were scattered over forearms, at the site of the burn, and here and there over the arm were several linear arrangements of papules, which the patient stated were sites of former pin scratches. In the mouth, upon the cheeks and tongue, were numerous lesions in groups, forming the white patches usually seen in that location in this disease.

For experimentation, two scratch marks were made on the unaffected skin of the left forearm, one scratch being made as a control with a sterile needle; the other was inoculated with serum from a scraped papule. When she returned one week later both scratch marks had developed typical lichen planus lesions, which had evolved under active mercurial treatment, while the older ones showed constant improvement.

BIBLIOGRAPHY.

Unna. Clinical History and Treatment of Lichen Ruber, page 20. 1885.
H. J. Brooke. British Jour. of Dermatology, page 435. 1900.
Kaposi. Text-book of Skin Diseases, English Trans.
Brocq. La Pract. Derm., page 229.
Beltmann. Arch. f. derm. u. Syph. LXXV., page 37.
Hallopeau et Lemierre. Annales Derm. et Syph., page 771. 1900.
Hallopeau et Trasteaur. Annales, page 1185. 1900.
Danlos. Annales, page 753. 1900.
Morel-Lavaillée. Annales, page 119. 1900.
Sabouraud. Annales, page 123. 1900.
Hallopeau. Annales, page 611. 1902.
Jacquet. Semaine Medicale, page 508. 1891.
Omerod. Brit. Jour. Derm., page 442. 1900.
Fordyce. Jour. Cutaneous Dis., page 63. 1899.

TUMOR OF THE CEREBELLUM.

By M. A. Bliss, M. D., and N. B. Carson, M. D., of St. Louis.

F. E. B., aged 15, white, male. Father and mother living and healthy. Several brothers and sisters living and healthy. No hereditary tendency to malignancy or tuberculosis.

He has not been well for two years. He would frequently come home from school complaining of headache. He could not play as other boys did, for he would get headache and everything would turn dark before him. He called these "blind spells." Last October he began to stagger in his gait, especially during his attacks of headache, and sometimes he would fall on his way home from school.

At this time he began to be nauseated, and occasionally he would vomit during the attacks of headache. Later he would sometimes vomit rather suddenly without preceding nausea. Mentally he was about as usual. He slept well and had a good appetite.

Present condition: Examined first, February 7, 1908. He staggers in his gait and walks with his feet wide apart and with constant contractions of the muscles of the feet and legs. His walk is of the "drunken" type. Repeated trials convinced us that he staggered more to the right than to the left. He has never fallen backward. His station is poor but not made worse by closure of the eyes. He is not ataxic in his upper extremities. Quick movements of the fingers can be maintained. He has no marked tremor. His strength is equal on the two sides. There are no sensory changes. His knee jerks are low but equal. There is no ankle clonus. The plantar reflexes are normal in direction. The cremasteric and abdominal reflexes are present and equal on the two sides.

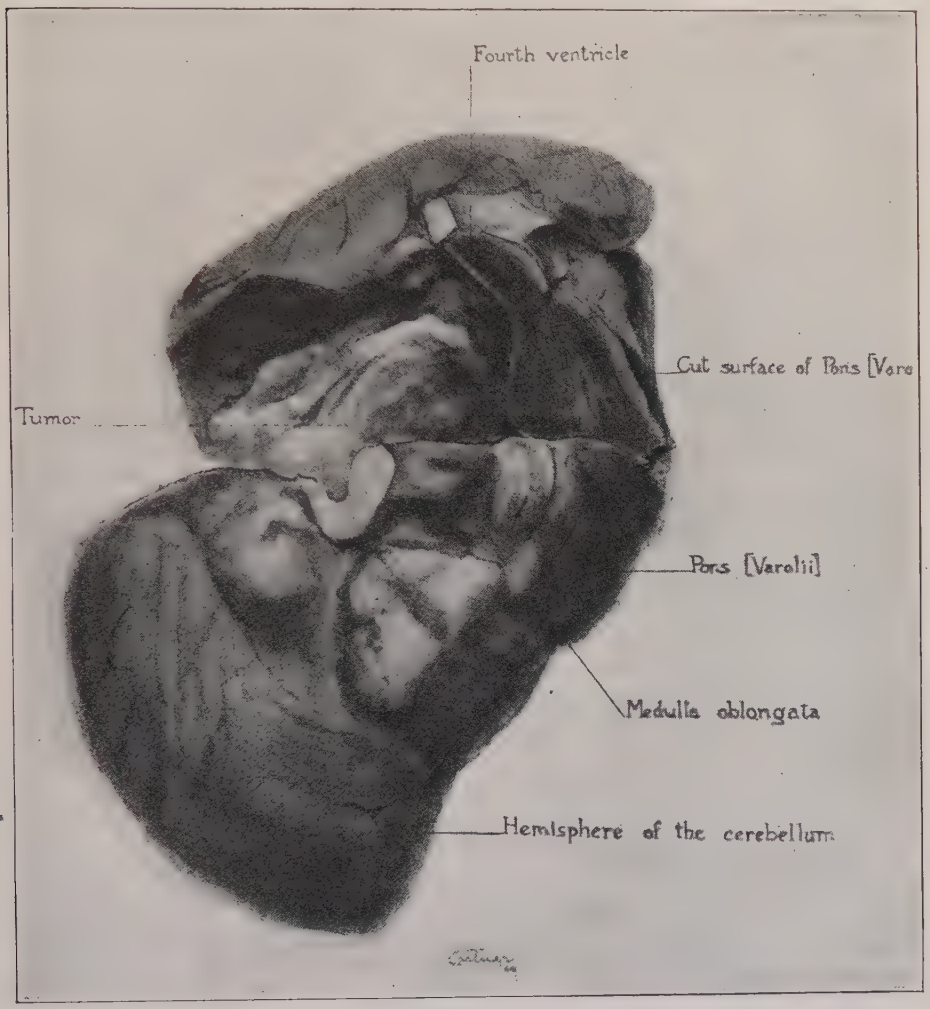
His pupils are dilated, the right more than the left. Both are sluggish in their response to light and accommodation, the right probably more than the left. Both pupils regain some of the dilatation in the presence of the same light. There is no paralysis of any of the extrinsic muscles of either eyeball. No ptosis. The eyes are closed readily and tightly on command. There is a swelling of the discs of two and one-half diopters in both eyes. The veins are engorged. There is edema. The fields are normal. Vision is good. Nystagmus is present constantly. It is not more when the eyes are moved in one direction than in the other, and is horizontal.

The facial innervation on the two sides is equal. He has a marked "cracked pot" sound, especially at the frontoparietal suture. Some

*Reported to the St. Louis Neurological Society.

separation of the sutures can be made out and the head gives some impression of a hydrocephalic shape.

During the two weeks following the time the above notes were made the patient was examined nearly every day, but his symptoms changed but very little. At first it was thought that he had deficient hearing on the right side and he complained of a tinnitus in the right ear which



Tumor of the Cerebellum.

he said was growing worse. But clearing out a mass of cerumen and dirt caused a disappearance of symptoms.

The boy had scabies and head lice when he came to the hospital and it took some days to get him cleaned up.

At times he complained of double vision but it was transitory and it was not possible to establish essential weakness of any of the ocular

muscles. He also at times seemed to have an inequality in innervation in his face. The left side seemed weaker in response to voluntary effort but stronger in emotional movement. But this varied and could not be always demonstrated. The inner canthus of the right eye seemed wider than the left and the right eye at time more prominent, but this also varied.

The sutures widened perceptibly while he was under observation and this natural decompression no doubt explained why he suffered very little with headache and why his discs did not swell more. In fact his discs were swollen less ten days after the first examination.

On February 24th an attempt was made to attack the growth. A cross-bow incision was made and the bone laid bare. Bleeding was very profuse; the patient got into a faulty position on the table which was interfering with his breating, but which was attributed to the anesthetic. His pulse became rapid and his blood pressure fell rapidly. No attack was made on the bone. The scalp wound was closed and the patient returned to bed. He reacted well and during the afternoon and night and the next day was in good condition, with normal pulse and respiration. Thirty-six hours after the attempt was made, the patient rather suddenly began to breathe very slowly. Under camphor injections and artificial respiration he revived somewhat, but within half an hour ceased to breathe.

Autopsy was limited by the family to an examination of the cerebellum. When the larger part of the occipital bone was removed the dura did not bulge, but as soon as the dura was removed the tumor mass could be distinctly felt in the right cerebellar lobe and seemed to extend into the middle lobe. On removal of the ring of the foramen magnum the medulla bulged and was seen to be compressed against the margin of the foramen. The cerebellum was removed with some difficulty and squeezing it in removal caused some of the softened portion of the tumor to exude.

An incision was made through the cerebrum into the lateral ventricles, which were found to be greatly dilated.

After the specimen was hardened in formalin, examination disclosed a portion of the tumor, as large as a hickory nut, protruding on the left side of the medulla. Another portion projected between the upper surface of the medulla and the worm, and at first was difficult to distinguish from the substance of the medulla.

The medulla at autopsy was sectioned transversely at a level with the lower part of the olive, and the part of the tumor which protruded extended almost to this point.

The medulla was expanded laterally. A leaf-like process with torn edges projected from the ventral surface of the medulla partially covering the left olive. The left olive was about half as long as the right.

An incision was made from before backward dividing the worm, pons, and medulla, and this exposed a tumor mass as large as a tamarind, hav-

ing its primary attachment apparently from the roof of the fourth ventricle and resting on its floor.

The cavity of the fourth ventricle was immensely dilated and entirely filled with tumor tissue. The medulla was much thinned by its encroachment as was the worm. Both lateral lobes were extensively excavated and their walls greatly thinned.

The tumor was so soft in parts as to flow on section. It was in parts pinkish and in parts light gray. It proved to be a glioma.

MEDICAL AND SURGICAL PROGRESS.

TUBERCULOSIS OF THE BONES AND JOINTS.

A REVIEW OF RECENT LITERATURE.

By NATHANIEL ALLISON, M. D.

1. TUBERCULOSIS OF THE JOINTS.—K. Vogel (*Deut. Zeit. für Chir.*, Leipzig, December, '08, XCVII., No. 1-2).
2. THE OPERATIVE TREATMENT OF PARAPLEGIA WITH TUBERCULOUS SPONDYLITIS.—Wassiliew (*Archiv. für Chir.*, Berlin, LXXXVIII, No. 3).
3. SURGICAL TREATMENT OF TUBERCULOUS AFFECTIONS OF THE HIP JOINTS.—König (*Berliner klin. Woch.*, March 8, '09, XLVI, No. 10, 429).
4. THE TREATMENT OF HIP DISEASE IN ITS EARLY STAGE.—Lannelongue (*Deut. med. Woch.*, 1908, No. 8, p. 359).
5. TUBERCULOSIS OF THE BONES AND JOINTS.—William W. Cadbury (Fourth Annual Report, Phipps Institute).
6. TREATMENT OF TUBERCULOSIS HIP DISEASE BY WEIGHT-BEARING AND FIXATION BY THE LORENZ HIP SPICA.—H. Augustus Wilson (*Surg. Sec. International Cong. on Tuberculosis*, Wash., D. C. Sept. 30, '08).
7. TRACTION IN THE TREATMENT OF HIP DISEASE.—Bradford and Soutter (*Amer. Jour. Med. Science*, December, 1908).
8. THE MODERN TREATMENT OF TUBERCULOSIS OF THE SPINE.—Lovett (*Clev. Med. Jour.*, Feb. 1909).
9. THE TREATMENT OF JOINT TUBERCULOSIS.—Ochsner (*Illinois Med. Jour.*, July, 1908).

The surgical treatment of tuberculous bone and joint lesions has long been a field of endeavor which has been turned up by innovations and suggestions of radical changes in methods. The treatment of these affections is, generally speaking, under two heads, namely: operative measures, where an attempt is made to excise the tuberculous focus; and non-operative measures, where conservative protective apparatus is used, with the end in view of aiding the organism in resisting the infection and finally getting the better of the tuberculous process. To illustrate this may be cited the treatment of Pott's disease by recumbency. This was advised by Perceval Pott, and has been recognized since his day as a valuable therapeutic agent. It has its limitations, however, in that this class of cases do poorly as a rule when confined to bed in the house. Substitutes for recumbency have been devised in the shape of ambulatory apparatus, consisting of corsets, braces and

plaster-of-Paris casts. Hip disease in like manner has been treated by recumbency, by braces, appliances and casts, and the evolution of the ambulatory treatment of hip disease is a subject of considerable interest. Not, however, until the days of aseptic surgery did it become possible to consider operations designed to remove the tuberculous focus entire. Previously amputation of diseased extremities had been much in vogue, but Koch's discovery of the tubercle bacillus and Röntgen's discovery of the *x*-ray have placed in the hands of surgeons data which have encouraged them to attempt methods better designed to overcome these conditions without loss of limb. Increased knowledge on physiology and on the important rôle played by the leukocytes in the absorption and conquering of disease processes has brought still further innovation into this realm of therapeutics. The passive hyperemia of Bier has come as a useful therapeutic agent, and its value in these cases is all but established. The constant change and the constant influx of new ideas and new methods makes the treatment of the tuberculous bone focus a subject of increasing interest; nor is the end as yet reached.

In considering an individual case of hip disease, or Pott's disease, of tumor albus, or of a tuberculous bone or joint wherever found, the question must be decided as to what method of treatment will give the best results, and will give these results in the least space of time. Recourse to radical operation may be had. On the other hand the patient may be put completely at rest and the joint protected. Between these two extremes we have the middle-ground of ambulatory treatment. Each of these methods has its devoted adherents, and there is forthcoming a constant series of reports and articles which illustrate the success attained by the employment of any one of them, or all of them. In order to determine what is a good result, it is necessary that a considerable period of time elapse, as immediate success is not possible of attainment in the treatment of these cases. Some faith, however, at the present time, may be placed in the reports of ultimate results that appear from time to time, as these cases have been under careful observation for a long enough period to be adjudged approximately ultimate. As to the various methods of treatment, there is perhaps no field of specialized surgery that allows greater latitude and offers a stronger appeal to the surgeon's judgment and resources, and in which he will find greater satisfaction in not sticking to preconceived ideas or hide bound rules, than does the treatment of tuberculous bone and joint lesions.

Koenig, for instance, has looked over the present condition of 568 cases of hip disease, finding that 294 of these needed operative interference and that 202 of these 294 showed the following results: 55 had died of other diseases, 114 had got well and required no apparatus to aid them in locomotion, 33 had regained normal joint function and 90 had more or less movable joints. Thirty-five patients still required a cane or crutch, and in 3 the condition was bad while 13 still had discharging sinuses. So much for the non-operative cases. In 274 where resection had been done, 60 patients could not be located. Of the remaining 214, 66 were well, and 16 of these 66 were able to engage in all the pursuits and sports of life. Apparatus was necessary in 43 cases and 34 still had sinuses. Koenig has done hip resection in 104 cases, making an attempt to remove every trace of diseased tissue. He claims a much more thorough technic of resection than is ordinarily employed, and points out the fact that inasmuch as only the severer cases have been

given operative treatment, his research into the ultimate results show very favorable conditions following a radical operation.

Wassilieu also reports six cases operated upon for paraplegia, occurring as a result of Pott's disease. He did what is known as Menard's "Costotransversectomy," an operation which is better designed to reach the disease than is laminectomy. He operated as soon as paraplegia developed and did not employ conservative methods at all. Of his six patients, four were cured.

Vogel, on the other hand, reports 349 cases of tubercuolsis of the shoulder, elbow, wrist, hip, knee and ankle treated by Bier's constriction hyperemia. He points out that it takes great care on the physician's part to treat these cases properly by this conservative method, and gives minute instruction as to the application of the constriction. He uses a simple rubber band, two or three inches wide, applying it one hour morning and evening, the limb being placed in a comfortable position with all other constrictions removed, and states that in every case of elbow and wrist tuberculosis the cure was complete with this treatment. It seems that this method of treatment is much more advantageously applied to diseases of the extremities than where either the hip or the spine is involved.

Lannelongue calls attention to the good results in the treatment of hip diseases by recumbency, plaster-of-Paris spicas and injections to the joints after the manner recommended by Calot. He is inclined to believe that Calot's good results are due more to conservative methods than to joint injections.

Wilson who has taken up the recommendation of Lorenz, which briefly stated is to the following effect: That nobody has a right to place a child with hip disease in bed, for almost invariably its health will fail. What should be done is to advocate weight-bearing with a short plaster-of-Paris spica to encourage what is called "nature's cure." The patients walk about without the use of crutches and activity is encouraged. This is a very radical departure from previously advocated principles and has this to recommend it: Weight-bearing is conductive to the benefit attained by an outdoor life and in turn prevents circulatory stasis, thereby securing the benefits obtained by the hyperæmic method of Bier. The objection that pathological dislocation is thus encouraged does not hold, as this condition is the result of muscular action and has occurred with greater frequency in other methods of treatment.

Adams has found that ambulatory cases of tuberculous joints do better than those confined and inactive. The importance of sunlight, fresh air and activity is essential; milk and egg diet is quite as important. In addition to these, the limb should be placed in 20 degrees flexion, 20 degrees abduction and 50 degrees external rotation. In this position the plaster-of-Paris is applied and the child is allowed to be up and about. The course of treatment is decidedly shortened and there is prevention of the occurrence of ankylosis in an unfavorable posture. Weight-bearing does not cause bone destruction; the method is applicable to incipient cases and to old cases with discharging sinuses, and has been followed by good results in 60 patients under Wilson's observation.

Bradford and Soutter, in a paper on traction in hip disease, analyze the various forms of treatment of an ambulatory and recumbent nature, and report the results of 1,809 cases treated at the Boston Children's Hospital. Of these, 30 per cent. were suppurative cases. The operations

other than incisions of abscesses performed were as follows: Amputation at the hip joint, 2; 1 surviving twenty years later and 1 death; excision, 64; 9 deaths, arthrotomies, curetting of the femoral head and neck, channelling of the neck, and 4 cases of dislocation of the head, 606 cases, 25 deaths. The causes of death were 12 tuberculous meningitis, 1 empyema, 1 double hip disease, 1 hip disease and Pott's disease, 1 scarlet fever, 1 diphtheria, 1 after abdominal incision, and 1 from uncomplicated hip disease. The results of the observation of these 1,809 cases after a sufficiently long time to draw conclusions was that there was ultimate mortality of 6 per cent., the cases under treatment at the hospital showing a mortality of 4 per cent. The percentage of abscesses was 30 per cent., ultimate results showed useful limbs in 98 per cent., shortening of less than two inches in 70 per cent., motion of 90 degrees or over in 40 per cent., absence of flexion deformity in 60 per cent. and absence of pathological dislocation in 70 per cent. These statistics being drawn from the out-patient of a large children's hospital and not being taken from a selected group of private cases whose treatment is under the most favorable circumstances, makes them statistics of especial value. The authors conclude that better results in hip disease are gained by the principles of traction than by any other method, even if it is more or less imperfectly applied. Experience has justified the expectation of a perfect recovery after thorough treatment. They compare the results obtained by other methods of treatment much to the advantage of treatment by traction and partial fixation.

In the Fourth Annual Report of Henry Phipps Institute, Cadbury states that of the 3,733 cases that appeared at that Institute for treatment, only 55 or 1.47 per cent. gave a history of bone or joint tuberculosis, and 12 of these 55 were not absolutely positive. Two cases had tuberculosis of the sternum and ribs, from direct extension of the tuberculous process in the lungs. In only 4 of the 55 cases was pulmonary tuberculosis not demonstrable. In 32 there was pulmonary disease in an early stage. The bone disease was the predecessor of pulmonary lesion in 30 cases, and in the rest the pulmonary disease seemed to have been the primary seat. Of the 55 cases, 22 were spine disease, 14 cases were hip joint disease, 7 knee joint disease, 4 in the femur, 2 in the elbow, 2 in the jaw, 2 in the bones of the forearm, and so on. A detailed report of each case follows. The interesting part about this report is that in so many cases of pulmonary tuberculosis, and tuberculosis elsewhere, there should be only 1.47 per cent. of bone and joint involvement.

Lovett runs over the treatment of Pott's disease and compares recumbency with ambulatory methods, stating that he believes the mechanical conditions prevailing in ambulatory treatment are obviously far less favorable than those in recumbency. If ambulatory treatment must be used, it is best borne by cervical and lumbar cases, and least well by cases with disease in the dorsal region. Plaster jackets are more efficient than braces when ambulatory treatment of the acute stage must be followed; and in the convalescent stage, braces are preferable to jackets. Treatment by recumbency is a necessity in all cases when disease becomes painful, when abscesses are threatened or present, or psoas contraction takes place; also in cases of paralysis, and when the general health fails. Psoas abscesses treated by recumbency and traction on the affected limb until it is evident that absorption will not occur. The mortality in 49 cases operated upon was 25 per cent., in cases not over five years of age, and 50 per cent. in cases operated

upon between five and ten years. Outdoor life, day and night, is essential to stimulate the process of repair. The author believes that recumbency fulfills the mechanical demands by wholly removing superincumbent weight, making fixation easy and not constricting the chest. Braces and plaster will aid the efficacy of treatment by recumbency. This paper presents a forcible appeal for conservative methods in the treatment of Pott's disease.

To Ochsner the treatment of bone and joint tuberculosis is quite an optimistic affair. He strongly advocates the use of tuberculin injections, using the opsonic index as a control. Also advises Beck's bismuth paste. He believes in using plaster-of-Paris to fix the joints, and recommends immobilization in a position of equilibrium. He presents rather too favorable a view of bone and joint tuberculosis, in saying that these affections if thus approached become most satisfactorily and easily managed.

From the foregoing references to some of the literature that has recently appeared, the conclusion may readily be reached that the treatment of bone and joint tuberculosis is still undergoing most radical changes, and that to those who see this class of disease, there often arises a necessity for a serious deliberation as to the best method or combination of methods to be employed.

SOME LATE WORK ON TUBERCULOSIS.

A REVIEW OF RECENT LITERATURE.

By Carl Fisch, M. D.

1. About the Frequency of Tuberculosis in Infants.—Paul Sehlbach (*Münch. med. Wochenschr.*, 1908, No. 7, p. 322).
2. About the Frequency of Tuberculous Changes in the Autopsy Material of the Pathologic Institute of Berlin.—H. Beitzke (*Berl. klin. Wochenschr.*, 1909, No. 9, p. 388).
3. The Presence of Tubercle Bacilli in the Circulating Blood in Tuberculosis.—Randl C. Rosenberger (*The Amer. Journ. of Med. Sc.*, 1909, No. 443, Feb. 2).
4. About the Frequency of Tuberculous Changes in Autopsy Material.—A. Necker (*Verhandlungen der deutsch. patholog. Gesellschaft*, Vol. 8, p 118).
5. Antibacterial and Antitoxic Immunization in Tuberculin Treatment.—E. L. Trudeau (*Journ. A. M. A.*, 1909, Jan. 23).

A review of the late literature on tuberculosis would be impossible on account of its voluminous character. It must be limited here to a few publications accessible to exact and practically controllable considerations that bear on important features of the tuberculosis question. Recent general literature on tuberculosis is extensive, and if we consider its bearing on the problem of the biologic character of the disease, we are compelled to admit that most of it is inaccessible to direct proof by experience or experiment. To this belong mainly the publications dealing with the results of animal experimentation. As valuable as they are, they should not be classed with the factors obtaining in human tuberculosis under ordinary conditions of life; an objection that also holds for the conclusions drawn from the animals treated under conditions never present in the ordinary course of their life. As far as human tuberculosis is concerned, the review of discussions made at the last Congress on Tuberculosis, at Washington, are a clear proof of the lack of definite and established facts, explaining the nature of these conditions.

That conditions must exist which allow tuberculous disease, is an old tenet. We know positively that no human being is entirely immune against the entrance into his system of the virus, and deals with it merely as a harmless foreign body, easily eliminated. However, Naegeli's extensive investigations first established that when an entrance has taken place, almost invariably tuberculous changes occur. His findings in many hundreds of autopsies showed in almost all of them the proof of a former or present tuberculous process that had never caused serious disturbances during life. In his record, deaths from tuberculosis are included but they are the smallest minority of the total. Other investigations have followed Naegeli's, more or less confirming his results. Of course, the character of the material used or the methods employed,

the critical capacity of the observer and many other factors influence such statistics, but the general conclusion to be drawn from all of the material published on the subject, including the latest, published by Beitzke and Mecker, point to the fact that only rarely a human being escapes a tuberculous infection. This proves with considerable weight the great resistance of the human being to the toxic effects of the tubercle bacillus. The mortality is small in comparison to the morbidity, nevertheless the mortality is such that it decimates the population of the world. The study of the causes of this, and the practical consequences of this study, have led to an amount of work and enthusiasm that never has been seen before. In spite of this, the principal questions in the exact interpretation of the process of human tuberculosis are not yet fully answered. With our modern knowledge of dealing with other infectious diseases, the tuberculous process will finally find its solution in identical or analogous relations. The most opposite opinions about origin, manner of entrance and transmission, are entertained to-day; therefore, an active attack against this infection is impossible. The origin is, of course, indicated by the presence of receptive tissues and by the tubercle bacillus. The receptivity of the tissues varies greatly, according to the histologic type or according to the age. The latter plays the most important part in the problem. The younger the tissue, the greater is the influence on it of the tubercle bacilli, so that in infants the infection in almost all cases leads to a fatal end in a short time. Sehlbach in his paper on the records of 1,390 autopsies made on infants and children up to nine years, found tuberculous lesions in 180 cases. Among these there were 1,150 infants in their first year, and in these the percentage amounted to 7.8. Others, like Stirnimann and Binswanger, have found almost identical figures. Hamburger, in a series of cases which were decidedly pathologic in other respects, found 15.4 per cent, with no extension of the tuberculous process to lead to death. Very interesting is the distribution of tuberculosis in infants in the second quarter of the first year of life. It is low in the first quarter, high in the second and third, and lower in the fourth quarter. In the second year the curve rises suddenly, then subsides considerably, and with the third and following years remains almost steadily at 50 per cent. Sehlbach bases on this observation the opinion that infantile tuberculosis in the first year is either due to infection by the mother or by the food; or, after the first year, to infection by other external sources, in consequence of contact with infected material of soil and objects, with which the babies in their movements come in contact. Although the tuberculosis of infants sometimes shows the result of resistance against infection by localized lesions or by encapsulation, the resistance ordinarily is very low and infantile infection leads always to early death. That only a small percentage of infected children carry the disease without symptoms to a later age, where it becomes active has been established by these observations, although they are relatively small in numbers. The importance of these observations is due to the fact that they were made under the same conditions during ten years in a population always the same. This fact would speak against Behring's theory that infantile and children's tuberculosis may heal, but that the infection leaves hypersensibility of the system that makes it a receptive subject of later introduced tuberculous virus. The theory that predisposition for tuberculous infection must be caused either by a juvenile healed or latent tuberculous process, is based on no facts.

The question of the location of the primary lesion of pulmonary tuberculosis has not been definitely answered. Again, the intestinal or other indirect introduction of the virus begins to be predominant, although the careful experiments of Pfeiffer have, at least in the case of one animal, established the ease with which primary tuberculous lesions of the lungs can be produced by the inhalation of a relatively small number of bacilli. His experiments, too, have shown that for infection by the intestinal tract, a thousand times the number of that for pulmonary tuberculosis is necessary. The positive results from the use of numbers, millions of times greater than that necessary for infection by inhalation, cannot be referred to as evidence for the intestinal origin, as such conditions never obtain in the life of animal and man.

An important addition to our means of deciding this question is Rosenberger's contribution on the presence of tubercle bacilli in the circulating blood. Tubercle bacilli had been found before by several observers, suggesting that, as a rule, they were always present in the blood in certain stages of the disease. Miliary tuberculosis also was apparently proved to be of this origin, although histologically its formation in that way cannot be accepted after Orth's publication. The importance of Rosenberger's work lies in different directions. The first is the ease of making a diagnosis of a tuberculous infection in conditions where the process is obscure and only indirectly suspected. Although we have, at the present time, sufficient other means to clinch the diagnosis with a high degree of certainty, the use of which is unfortunately very slow in becoming routine in medical practice, the method of the author will likewise be a means to demonstrate by finding tubercle bacilli in the blood in every one of all forms of tuberculous disease, instead of the search for the tubercle bacilli elsewhere. The method is very simple and its difficulty lies only in the possibility of obtaining the necessary quantity of blood. Very often one cc. is sufficient; sometimes as much as five cc. are needed. The blood is mixed with an equal amount of two per cent aqueous sodium citrate solution and allowed to precipitate for twenty-four hours. The sediment is then spread in thick layers on slides, and dried eventually by higher temperature (incubator). The slides are immersed afterwards in distilled water, to be changed several times, until all of the hemoglobin is removed and the red cells are disintegrated. After drying the slide is covered with a thin transparent film that can be treated like all so-called smear specimens. They are fixed by heat or alcohol and stained in the ordinary way for tubercle bacilli. The counterstain with methylene blue is of great importance, as the nuclei of the blood leucocytes are preserved and give a beautiful guide in focussing the fields. Without it the search for tubercle bacilli is very difficult as nothing is stained but the bacilli, and eventually other bacteria in mixed infection. This, however, is very rare. This simple method is applicable in every case of tuberculosis, no matter whether glandular, osseous or pulmonary; no matter whether the lesions are active or dormant, tubercle bacilli are always found. The reviewer has had a chance in nine cases to make use of the author's procedure; five of these were open pulmonary tuberculosis, the other four were, one of the cervical glands, and three of so-far closed pulmonary infection. In all cases the result was positive, and was especially marked in the cases of cervical glands and closed pulmonary lesions. The skin test and clinical condition of the patients had made this procedure unnecessary, but it served as welcome additional information. It alone, of course, would have been conclusive.

The direction in which this new knowledge will influence our conception of the manner of entrance of tubercle bacilli, and of their primary location in one or the other organs or tissues, is difficult to find. We know that presence of pathogenic bacteria in the circulation obtains, at times, in all infectious diseases. The meaning of this is not clear. To call it an infection of the blood is not justifiable. Even in the so-called septicemia the bacteria circulating in the blood are only evidence of disseminated infection by the organism. In this way they may, in septicemia, be a factor of bad prognosis. That the same presence of bacteria is found in infectious processes of entirely mild character and is made a means of diagnosis in obscure and doubtful cases, proves that it means nothing as to the gravity of the infection. The bacilli are found in the mildest cases of typhoid with no characteristic clinical conditions, thus showing that their presence in the blood leads neither to aggravation of the symptoms nor to independent pathologic conditions. The staphylococci of a cutaneous abscess may often be demonstrated in the blood without their causing other lesions. The focus of infection must be predisposed to harbor them. This obtains also in lesions of the valvular apparatus of the heart caused by bacteria. Endocarditis of an infectious character is always the consequence of a lowered resistance, caused, perhaps, by the general intoxication of the tissues by any infection. Thus the presence of tubercle bacilli in the blood is not unexpected, and shows moreover that, just as in other infections, it carries no meaning as to the character of the infection. It is simply of diagnostic value. The presence of tubercle bacilli in the blood, not in so-called "initial" tuberculosis of long standing, but in early location of the bacilli somewhere in the body, shows that only at the point of entrance do they find, in the infected organism, a favorable pabulum to multiply. That a small area of involved tissue can be the source of their presence in the blood, is certain; and, moreover, this is shown in other infectious processes that remain always localized.

The late resurrection of Koch's discovery of tuberculin, and its use for therapeutic purposes has so far not resulted in conclusive or positive experiences, although this does not mean that its influence on the infection is altogether negative. Trudeau's paper on the subject gives very valuable directions as to the individualization of its application resulting from his long and wide experience. That tuberculin contains substances, specifically reacting on products of tuberculous tissue, has been demonstrated by Wassermann, in his investigations on the antibodies. In spite of many contradictions made by others, following his methods, there is no doubt that in tuberculous infection processes of interreaction between the virus or its products and the tissue cells exist, homologous to those firmly established for other infectious processes. The later publications indicate that Wassermann has placed tuberculosis in the series of other infections which by further study will be accessible to specific products. Although Trudeau, in his final conclusions, is rather doubtful whether tuberculin treatment is of great value, he hesitates to deny its importance if used when there are definite indications. It is only a question of time, in the opinion of all, when the further study of this substance will lead to uniform ideas. And with our present way of dealing with the problem of eliminating tuberculosis, we ought more and more to be convinced that our ways of procedure are ineffective. In Germany, great disappointment with the results is becoming general. The compulsory improvements by Park, of New York, cannot be cited as an example for general application. Our pop-

ulation consists of all sorts of people, some of whom are mentally incapable of understanding logically measures of a protective nature. They will always consider them as an infringement on their liberty and therefore disobey them. It will be impossible, for many ages, to raise these people to the level of education enabling them to understand these measures and make them their own. Protection against infection can only be obtained by methods that prevent the possibility of infection—that is, to suspect tuberculosis in all obscure disturbances which cannot be explained, and to proceed against the tubercle bacilli before the microscope gives the clinching proof. Attempts at diagnosing tuberculosis early, are made to-day, but only in cases where distinct clinical symptoms exist, in other words, where the process is not initial any longer, but has already influenced the constitutional integrity. We have the means to-day to discover, with almost absolute reliability, the earliest periods of tuberculous infection. We know by experience that such a method will result not only in stopping the progress of the invasion, but also will prevent the appearance of destructive processes leading by the communication with the air passages to the infection of other persons of the community. If the diagnosis of tuberculosis would be based generally on the proof only of the existence of an infectious process of a tuberculous character, and not on its activity and its involvement of life-important organs, we would be able to eliminate tuberculosis in a limited number of years. The present methods of dealing with tuberculosis are inefficient, and take up only problems involving the results of the disease when it is fully established. We can prevent this hopeless state by an early positive diagnosis, in conditions where other explanations are impossible; and by excluding other conditions the way should be led to an investigation of a condition that is tuberculous. The modern sanatorium, and the lay assemblages so active now in the fight against tuberculosis, would disappear in fifty years for want of patients with open tuberculosis.

CUTANEOUS REACTIONS TO TUBERCULIN IN CHILDHOOD.

A REVIEW OF RECENT LITERATURE.

By Alfred Friedlander, M. D.

1. Comparison of the Cutaneous Reactions and Their Diagnostic Value.—Hamill Carpenter and Cope (*Archives of Internal Med.*, December 15, 1908).
2. Cutaneous Reactions in Childhood.—Feer (*Muench. med. Woch.*, 1908, No. 1).
3. Ophthalmo-reaction.—Wiens and Gunther (*Wien. klin. Woch.*, 1908, No. 36).
4. Conjunctival Test.—Baldwin (*Jour. A. M. A.*, Feb. 20, 1909).
5. 1000 Tuberculin Tests in Childhood.—Holt (*Archives of Ped.*, Jan., 1908).
6. Cutaneous Reaction.—Hermann (*Pediatrics*, March, 1909).
7. Modification of Cuti-Reaction.—Tedischi and Lorenzi (*La Pediat.*, September, 1908).
8. Stasis in Cuti-Reaction.—Aronade (*Jahrbuch f. Kinderheilk*, March, 1909).
9. Puncture Test.—Hamburger (*Muench. med. Woch.*, 1909, No. 1).
10. Cuti-Reaction in First Half Year of Life.—Siegert (*Deutsch. med. Woch.*, 1908, No. 39).
11. Cuti-Reaction in Newly Born.—Bondy (*Muench. med. Woch.*, 1908, No. 39).
12. Hypersensibility.—Moro (*Muench. med. Woch.*, 1908, No. 39).

The literature concerning the cutaneous reaction for tuberculosis has grown so rapidly of late that only a cursory review of existing views is possible in such a summary as this. It would appear to be rather generally admitted that the ophthalmo-reaction presents no advantage over the cutaneous tests, while the dangers following its use are real and to a degree unavoidable. In a very careful series of comparative tests, Hamill, Carpenter and Cope found that practically there was uniformity of results in the ophthalmo, the cutaneous (v. Pirquet) and the percutaneous (ointment test of Moro) tests. They found, however, that the eye test is not nearly as satisfactory as the others, on account of its dangers. Similar conclusions, based upon a study of 409 cases, were reached by Wiens and Gunther. Indeed, various authors have found unpleasant and, at times, serious sequelæ to follow the eye test. If, as seems probable, further investigations will show that this test has no advantage over the skin test, it will doubtless fall into disuse, particularly as regards its use upon children. Comparing the scarification and ointment tests, Hamill and his associates found that the ointment test offers the advantage of eliminating any denudation of the skin, thus lessening the chance of infection.

Baldwin, reporting 1,087 tests, finds that the eye test is more dangerous than the skin test, without any compensatory advantage. He believes

the cutaneous test to be distinctly better. Hamill and Carpenter made 85 subcutaneous tests (by hypodermic injections of tuberculin) in confirmation of skin tests previously made; 63 had been positive, 22 negative to the skin reactions. All the negative cases were confirmed by the subcutaneous tests. In 2 of the cases, originally positive, confirmation was lacking; in 1, it was doubtful. These authors hold that negative tests, especially if repeated, are of more value than the positive reaction in definitely excluding the possibility of tuberculous infection. Prognostically, a gradual diminution of the reaction in advanced cases may indicate an unfavorable course. Feer emphasizes the fact that a negative reaction is of special value in older children, because between the ages of 10 and 15 years, 35 per cent of non-tuberculous children react, considering non-tuberculous to mean that there is no active focus present. This proportion diminishes in early life, and in nurslings a positive reaction may be interpreted in the sense of an active tuberculous infection. Baldwin does not think that the test has any prognostic value. Simply as an aid to diagnosis, its value is indisputable. He thinks that the subcutaneous test should be reserved for cases where a focal reaction at the site of the disease is desired, and when the other tests are negative. Siegert regards the cuti-reaction as specific even in the very early months of life, contrary to the view formerly expressed that young infants would not react. Cases of positive reaction before the end of the third month of life are reported. Siegert finds that the test is often positive in infants in beginning as well as in advanced lesions. Bondy tested 350 infants by the cuti-reaction, the tests being made between the second and fourth day of life in each instance. All of the tests were negative. Of the respective mothers, all of whom were tested at the same time, 252 (71 per cent) gave a positive reaction. A satisfactory explanation of the phenomenon is not offered.

Contrasting the various reactions, Hermann finds that these tests are of more value in infancy and early childhood than they are in adult life. Thus, a positive reaction in early life is of greater significance, because at this time there is less likelihood of the presence of healed tuberculous lesions. He holds that the subcutaneous test is possible only in afebrile cases, and practical only in institutions where very careful post test control can be had.

He finds the puncture test too painful and without advantage over the cutaneous tests. This view is at variance with that of Hamburger. As a result of his studies, this latter author holds that if in a suspected case in childhood the cuti-reaction is negative, an appropriate dose of tuberculin should be injected subcutaneously with special reference to a resulting puncture reaction (at the site of injection). This latter, if it occur, is to be regarded as proof positive of tuberculous infection. According to Hamburger, cases not reacting to the skin, will give a positive puncture test subsequently. His views in this regard are upheld by v. Pirquet, the originator of the cutaneous test (and, indeed, by many other investigators. Ed). Hermann finds the conjunctival test not free from danger, especially if the conjunctiva be not altogether normal. The inunction test, according to Hermann, is not as easy as the cutaneous test, over which it possesses no advantages. According to this author, the cutaneous test has the advantages of simplicity, ease of application and freedom from danger. No special preparation is required, the ordinary crude tuberculin being used. The test has the great advantage of being applicable for ambulatory cases,

as examination is not required for twenty-four to forty-eight hours after the test is made.

Tedeschi and Lorenzi, after reciting the dangers of the eye test, suggest a modification of the skin test, using the lobe of the ear. They use a small syringe of 1 cc. capacity, filled with an aqueous 5 per cent solution of tuberculin. The helix of the child's ear is cleansed, held between thumb and finger, and a certain quantity of the fluid injected under the skin. The test is said to be without danger, and there is no doubt relative to a positive reaction as sometimes occurs in the skin test. The procedure has the further advantage of permitting dosimetric graduation of the amount of tuberculin used. The practical advantage of the area chosen (lobe of the ear) lies in the fact that because of the extreme thinness of the skin, the subcutaneous swelling can most easily be discerned. Aronade calls attention to the diagnostic value of stasis in the cuti-reaction, basing his conclusions upon 150 positive reactions in children and adults. Through stasis, artificially induced about the site of scarification, by any method of localized hyperæmia, small hemorrhages can be provoked in the region of the papule, while the control areas remain free. He finds this procedure of special importance in doubtful cases, where reactions are torpid and for cases of miliary tuberculosis, where the cuti-reaction may be doubtful.

Studying his ointment test, Moro finds that the nervous system must surely be involved in the tuberculous reaction. After inunctions, Moro obtained a symmetrical reaction in corresponding body areas where no tuberculin had been applied. In the light of such phenomena, the percutaneous reaction is to be regarded as a vasomotor manifestation, a sort of angioneurotic inflammation.

Holt has made a careful series of tests, 1,000 in number, in young children. He finds that young infants do not respond to the eye test, which is, moreover, not free from danger. No reaction was obtained in dying children or those suffering from extreme prostration. This corresponded to his experience with the cutaneous tests. Six hundred and fifteen eye tests and 217 skin tests were made. The reaction in general corresponded to the pathological lesions. This latter test has the advantage of ease of application, absence of necessity of close watching, and absence of all unpleasant sequelæ. The reactions were easily recognizable with control.

The puncture test, made 38 times, did not appear to have any advantages over the other tests.

Holt finds that fever reactions with tuberculin (subcutaneous injection) are quite as reliable in children as in adults. In general there is not much difference between the skin and eye tests, as regards reliability, but much as regards safety. No test is as absolutely reliable as the demonstration of tubercle bacilli in the sputum, cerebro-spinal fluid, and these tests cannot entirely take the place of careful clinical examinations, but should be considered as merely valuable adjuncts. In general, while the tests furnish strong testimony as to the probability of the existence of tuberculosis, they cannot ordinarily enable us to distinguish between active and latent foci of the disease.

NYSTAGMUS WITH RELATION TO DIAGNOSIS OF LESIONS OF THE INNER EAR AND CEREBELLUM.

A REVIEW OF RECENT LITERATURE.

By Wm. B. Chamberlin, M. D.

1. Untersuchungen ueber den vom Vestibular-apparat des Ohres reflecktorisch ausgelösten rhythmischen Nystagmus und seine Begleiterscheinungen.—Barany.
2. Physiologie und Pathologie—Functions Prüfung des Bogengang—Apparates der Menschen.—Barany (*Klinische Studien*).
3. New Methods of Examining the Semi-Circular Canals and Their Practical Significance.—Barany (*Annals of Otology, Rhinology & Laryngology*, 1908, p. 755).
4. Experimental Nystagmus With an Application of Its Principles to the Diagnosis of Lesions of the Inner Ear and Cerebellum.—Chamberlin (To appear in the *Annals of Otology, Rhinology & Laryngology*, 1909).
5. Reactions of the Labyrinth and Their Significance in the Diagnosis of Suppurative Labyrinthitis.—Davis (*Jour. A. M. A.*, November 21st, 1908, p. 1754).
6. The Non-Acoustic Functions of the Labyrinth. A Review of Our Present Knowledge of the Organs of Static and Dynamic Equilibrium.—Friedenberg (*Annals of Otology, Rhinology & Laryngology*, September, 1908, p. 670).
7. Treatment of Infective Labyrinthitis After Fifteen Years' Experience.—Jansen (*Annals of Otology, Rhinology & Laryngology*, June, 1908).
8. Der Otitische Kleinhirnabszess.—Neumann.
9. Circumscribed Purulent Inflammations of the Labyrinth.—Neumann (*Annals of Otology, Rhinology & Laryngology*, 1908, p. 762).
10. Symptomatology and Diagnosis of Labyrinthitis Consecutive to Purulent Otitis Media.—Reik (*Annals of Otology, Rhinology & Laryngology*, 1907).
11. The Functions of the End Organs in the Vestibule and Semi-Circular Canals and the Methods for Examining These Canals in Practical Diagnosis.—Shambaugh (*Jour. A. M. A.*, April 3d, 1909).

Nystagmus is of two kinds—undulating, where both movements are equal in time and extent; and rythmical, consisting of a slow and a quick component. Nystagmus of otitic or of cerebellar origin, belongs to the second group. The nystagmus is designated as being to the right, the left, or vertical from the direction of the quick component. It may be pure vertical, horizontal or rotatory, or various combinations of these. Glance in the direction of the quick component increases the intensity of the nystagmus. Glance in the opposite direction causes it to diminish or disappear.

Typical ear nystagmus can be produced experimentally by turning, by injections with hot or cold water, or by electrical stimulation.

Turning. If a patient is placed on a revolving stool and turned ten times to the right during an interval of twenty seconds, there is produced during the turning, the head being in the upright position, a horizontal nystagmus to the right, *i. e.,* the quick component is to the right, the slow toward the left. On cessation the nystagmus is reversed, the quick component is toward the left, the slow toward the right. If the head instead of being held vertical, is tilted forward at an angle of ninety degrees during the turning, the nystagmus as well as the after nystagmus are rotatory instead of horizontal. On account of the greater convenience observation is usually made of the after nystagmus—the nystagmus after the turning has ceased.

Heat and Cold. Injecting the right ear with water above body temperature causes a nystagmus to the right. Injecting it with water below body temperature causes a nystagmus to the left. Similar results are, of course, obtained by injecting the opposite ear. The nystagmus is due to the heat or cold and not to the pressure as may be shown by substituting hot or cold air for water. Stimulation with water above body temperature then causes a nystagmus toward the side of stimulation; cold water a nystagmus to the opposite side.

Electrical Stimulation. If the kathode, or negative, pole of a galvanic battery be placed on the tragus, while the anode, or positive pole is held in the hand, during the passage of fifteen to twenty miliamperes of current, there will be a nystagmus toward the stimulated side. Substitution of anode for kathode causes a nystagmus to the opposite side. The ear reacts to electrical stimulation when there is no longer a reaction to heat or cold. This would suggest that the electricity affects the nerve fibres themselves, while the heat or cold affects only the endings. Compression and rarefaction of the air in the external canal causes nystagmus where there is a fistulous communication between the middle ear and labyrinth. One may even produce movements of slight extent where there is no longer a reaction to heat or cold. The reason is that the pressure has a more marked effect than caloric stimulation. In cases of fistula the direction of the nystagmus may be various, but aspiration will always give the opposite result from compression. The caloric test should, of course, always be made in addition.

Pathological Cases. Circumscribed perforations or irritative lesions, the result of an extension of the suppurative process from the middle ear to the labyrinth, cause a nystagmus toward the side of the lesion; while destructive lesions or diffuse suppurations cause a nystagmus to the opposite side. In diffuse suppurations the function of the labyrinth is destroyed and injection of the affected ear will produce no effect. With circumscribed inflammations, the affected ear will still react to stimulation with heat and cold. If, on account of the presence of granulation tissue it is impossible to bring the hot or cold water into immediate contact with the labyrinth, turning will be a valuable aid in establishing a diagnosis. For example, in a diffuse suppuration associated with destruction of the right labyrinth, the after nystagmus to the left, after turning to the right, will be greater than the after nystagmus to the right, after turning to the left. In other words, in destruction of the labyrinth, the after nystagmus to the sound side is greater than the after nystagmus to the diseased side.

In cerebellar abscess, the nystagmus will be toward the affected side and injection of the affected ear will be void of result, for experience

has shown that cerebellar abscess is associated with diffuse and not with circumscribed inflammations of the labyrinth. The nystagmus from cerebellar abscess further differs from that of labyrinthine origin in that, in the former, the nystagmus gradually increases in intensity; whereas, in the latter, it decreases in intensity fairly rapidly, so that in a period varying from fourteen to twenty-one days following a diffuse suppuration we may have no nystagmus at all.

At the beginning of a diffuse suppuration, or after ablation of the labyrinth by operative interference, we have a nystagmus of extreme intensity. It is present not only with glance in the direction of the quick component, but with glance in the opposite direction and straight ahead as well. After a varying interval the nystagmus with glance in the direction of the slow component is lost, next that with vision straight ahead and finally the nystagmus with glance in the direction of the quick component. We have here a quantitative estimate of the nystagmus.

The nystagmus is associated with dizziness. This differs in character with the individual. The subject may seem to be standing still while the objects revolve about him, or *vice versa*. He may even seem to revolve with the objects or in an opposite direction. Glance in the direction of the quick component not only increases the nystagmus, but the dizziness as well, while glance in the direction of the slow component decreases the dizziness or causes it to disappear. If loss of equilibrium is associated with the dizziness, the patient falls in the direction of the slow component, though he may have the sensation of falling in the opposite direction.

The position of the patient in bed is interesting as well as of diagnostic importance. With a diffuse suppuration on the right side, he will have a nystagmus to the left. Nystagmus and dizziness will accordingly be extreme with glance toward the extreme left. With such a lesion, the patient will lie on the left side. In this position the eyes are directed away from the pillow and toward the right, for the dizziness and discomfort are thereby decreased. He lies on the side opposite to the lesion.

In cerebellar abscess on the right, the nystagmus is toward the right. With the face buried in the pillow, he looks toward the left, decreasing his nystagmus. He lies on the side of the lesion.

Conclusions. 1. Ear nystagmus is rotatory and rythmical in character. 2. Glance in the direction of the quick component increases the nystagmus. Glance in the direction of the slow component causes it to disappear. 3. Experimental and spontaneous nystagmus will give us accurate information as to the character and location of the lesion. 4. The position in bed is easily explained on scientific grounds and is of diagnostic value. 5. Heat, kathode stimulation, circumscribed inflammations and cerebellar irritation, all cause a nystagmus to the stimulated or involved side. 6. Cold, anode stimulation and diffuse suppurations, all cause a nystagmus to the unstimulated or sound ear.

RENAL DECAPSULATION IN PUERPERAL ECLAMPSIA.

A REVIEW OF RECENT LITERATURE.

By Hugo Ehrenfest, M. D.

1. Renal Decapsulation in Puerperal Eclampsia. — Croom (*Edinburgh Med. and Surg. Jl.*, May, 1909, p. 443).
2. Renal Decapsulation in Puerperal Cases.—Buist (*Ibidem*, p. 452).
3. The Physiologic Basis for Decapsulation of the Kidney in Eclamptic Anuria.—Nicholson (*Ibidem*, p. 456).
4. Zur Nierenaushuelsung oder Nierenspaltung bei Eklampsie. —Sippel (*Zentralbl. f. Gyn.*, No. 51, 1907, p. 1586).
5. Decapsulation of the Kidneys in Eclampsia.—Mueller (Orig. in Danish. Abst. in *Jl. Am. Med. Assoc.*, Feb. 20, 1909, p. 673).

Decapsulation of the kidneys as a surgical treatment for chronic nephritis was first recommended by Harrison for cases in which there was evidence of an increased tension of the kidneys. Sippel (4) accepting this idea first suggested this operation for cases of puerperal eclampsia. He found the kidneys of patients, who had died from eclampsia, in a state of venous congestion terming this condition very suggestively as renal glaucoma. The operation was actually performed for the first time on a woman suffering from eclampsia by Edebohls, of New York. In a book entitled "Surgical Treatment of Bright's Disease," published in 1904, he detailed his personal experience with this operation in 72 cases of chronic nephritis which number included one case of puerperal eclampsia. Another case he reported later.

According to Croom (1) whose paper gives an accurate bibliography of this subject, this operation, up to the present time, has been performed for eclampsia on 32 patients, of whom 17 recovered, or including Croom's own case on 33 patients with 18 recoveries. It may be stated here that very recent literature contains a few more reports of favorable results. Thus out of three cases operated by Buist (2) two recovered. Mueller (5), in a paper published earlier than that of Croom, has recorded another favorable case. He was able to collect 23 cases from literature, and showed that in the eight fatalities scarcely in any one instance could the decapsulation be held responsible for the unfavorable outcome. That the percentage of failures apparently is high cannot be surprising because this operation to-day is performed only after all other forms of treatment have been tried and exhausted. It must be remembered that Edebohls originally suggested to perform this operation during pregnancy, and thus to enable the woman to go to term. Obviously the objection was made at once (by Sippel) that it would seem inconsistent to attempt to permanently relieve this serious condition without first removing the essential cause of its existence, *i. e.*, the pregnancy. Soon the idea was generally accepted that renal decapsulation can be resorted to only after the uterus has been emptied either

artificially or spontaneously, and to-day this operation is considered especially adapted for desperate cases in which convulsions continue after labor, or make their first appearance post partum. The immediate indication for surgical interference, as a rule, will be given by an anuria. "Whatever the remote cause of eclampsia may be," writes Croom, "the condition is mainly one of toxemia with insufficient elimination. This is shown by its mode of onset, by the prodroma when present, and the degeneration of the parenchyma of liver and kidneys, as well as by the improvement brought about by eliminative treatment of any kind, when the condition has not advanced too far. Every one patient who recovered after the operation very soon began to pass largely increased amounts of urine and of urinary solids and of urea."

The rationale of this operation is that the stripping or incision of the capsule permits the restoration of the blood circulation through the kidney, and re-establishes diuresis with rapid elimination of toxins. I have already referred to Sippel's idea of a glaucomatous condition of the kidney in the eclamptic state. Nicholson (3) offers the following interesting explanation of the physiologic basis for decapsulation in eclamptic anuria: There is in these cases invariably present an increase in arterial pressure. Investigations have shown that at the beginning of the convulsive state arteries available for palpation are markedly contracted. At this stage the secretion of urine may not be diminished. As the condition progresses the blood-pressure still rises higher, but in spite of this fact the quantity of urine steadily diminishes. In eclampsia, when the blood-pressure is at its highest, the secretion of urine is at its lowest—is perhaps abolished altogether. At this stage it is probable that convulsions or coma will be present. Some profound alteration in the circulation of blood through the kidneys must have taken place. Such sudden renal incompetency may be explained by circulatory disturbances alone, even in the healthy kidney, in the absence of any previous pathologic changes. One is forced to this conclusion when one recalls the many instances in which, as soon as the convulsions subside, all the renal symptoms disappear, and there is rapid and complete restoration to health. That the secretion of urine is not a simple consequence of the blood-pressure in the renal vessels, as one would expect from the teachings of physiology, can be proved by the fact that compression of the *renal vein* actually arrests the secretion of urine. The secretion of urine increases and diminishes with the increased and decreased *flow of blood* through the kidneys. This physiologic fact is a most important one, for what happens to the kidney is that, as the result of the eclamptic condition, the flow of blood through its vessels is entirely stopped. Nicholson finds support for this assumption by the effect of certain vaso-constricting drugs upon renal circulation and urine secretion. The various circulatory features which develop during the eclamptic state, clearly point to the presence in the blood stream of some powerful vaso-constricting substance. If a vaso-constricting drug is introduced in small quantity it acts upon the arteries and arterioles of the body to a moderate degree. More blood then flows through the vessels of the kidneys and, as well known, with the rise of the blood-pressure in the glomeruli the secretion of urine is increased. But if the vaso-constricting substance, introduced in larger quantity, acts more powerful, it will also exert its contracting effect upon the renal artery and its branches. The secretion of urine under such conditions must be diminished or entirely stopped. And yet the brachial or radial pressure is found enormously high. "This is no fancy picture, because it

can be produced by such a drug as digitalis." Peculiarly enough with the decrease of the arterial blood supply the veins become congested, as has been shown in animal experimentation. This additional interference with circulation is very unfortunate for the eclamptic patient. This may, however, explain why suddenly a large amount of albumin may appear in the urine and again disappear shortly afterwards.

This briefly is the explanation given by Nicholson for eclamptic anuria as it occurs in women who have never previously suffered from nephritis. This same alteration may, of course, occur when the kidney happens to be affected by a chronic parenchymatous or interstitial nephritis.

There are only two ways in which it is possible to get more blood to flow through kidneys affected in this manner. One way is to dilate the renal arteries. There are certain drugs—particularly the nitrites—that have the power of dilating vessels. Most of the drugs, however, used for this purpose produce a dilation of *all* the blood-vessels in the body, probably including those of the kidney, but thus fail to produce the desired specific effect upon the kidneys. The other way to start the flow of blood in eclamptic anuria is obviously *to lower the pressure of blood in the renal veins.* Very free purgation will lessen the venous congestion in the kidneys, so also will dry cupping over the loins, and free bleeding from a large venous trunk. But if anuria is complete, the patient is gravely ill, and all other means have failed, then there is no doubt that "the quickest and most useful thing to do is to expose the kidney and draw off blood directly from the venous plexuses of the organ. In cases of eclamptic anuria occurring in women who have not previously suffered from nephritis, and who in all probability have healthy kidneys, complete decapsulation is not necessary." The fact, mentioned above, may be recalled once more, that in all cases which ended favorable a free diuresis immediately followed operation.

Decapsulation, performed by competent hands, is not a dangerous operation, but can and should be resorted to in eclamptic patients only after all other known means of relief have been exhausted, obviously including the emptying of the uterus. While plainly indicated in cases of anuria, one has to agree with Croom that the operation should not be limited to this indication, but can be successfully performed whenever it is apparent that the kidneys are the organs most seriously implicated.

CORRESPONDENCE.

PARIS LETTER.

By Auguste A. Housquains, M. D.

"FULGURATION" IN THE REMOVAL OF MALIGNANT TUMORS.

The numerous tentative efforts of treatment of cancer by electricity, which have been so decidedly to the fore of late, have not yielded the high hopes entertained by those who were expecting glittering results from hasty experimentation. Invariably when one or another electrical method gives proof of its inefficiency, we see surgeons affirm that surgical intervention is at present the only possible means at our disposal to establish hope with those who are afflicted with this disease. And even when what is now extolled as the process of "fulguration" was first advocated, there was a similar attitude of scepticism on the part of those who firmly believe in the efficacy of the knife.

Nevertheless, numerous facts have accumulated since the eventful day when Professor Pozzi, in July, 1907, presented to the Academy of Medicine a report on a communication of Dr. de Keating-Hart, of Marseilles; and though at the time a certain number of surgeons showed themselves refractory to the method, there were others, on the other hand, who thought it was impossible to judge of its far-reaching results since it had been given only a preliminary trial. But the immediate results had been encouraging enough; in fact, in some instances, beyond expectations; and this being the case, the consensus of opinion was that further experimentation should be encouraged. Hence, it would appear that "fulguration" is a method which should definitely enter into our therapeutics, and, moreover, should receive the study to which a useful therapeutic measure is entitled.

To dissipate all confusion in the mind of the reader, it is necessary to define at once, in a clear and precise way, what is really meant by "fulguration" of the tissues. Not only is it a method whose action is electrical, but it is a therapeutic measure consisting of a combination of surgical and electrical interventions. Hence we are justified in describing it as an electro-surgical procedure which has for its object a special reaction on the tissues. Let us at once admit that its action is one of cauterization and that destruction is only secondary. The intervention begins with the throwing out of sparks, rapid and diffuse, followed by a surgical operation, properly called; and finally by "fulguration" again.

In the beginning, Dr. de Keating-Hart advised only the curettage of the tissues by the sparks. Later he advocated, after the preliminary use of the sparks, the ablation of the indurated and vegetating masses by the surgeon, a procedure which he characterized as "insufficient surgery,"

and following this, the use of the sparks again. To-day he claims that to obtain a truly lasting result, "the necessary minimum of the surgical act is the complete ablation of the macroscopic lesions"—that is to say, all the masses, be they indurated or vegetated, which the eye or finger reveals as being of the nature of a neoplasm. Therefore, the surgeon ought to perform an operation as extensive and complete as possible, leaving a vast bleeding area on which the spark system can be made effective.

To practice "fulguration" one utilizes high-frequency currents, furnished by an apparatus with a bobbin which indicates the inductance, a Wähnelt turbin interrupter of maximum speed, a Gaiffe-d'Arsonval gasoline condenser, and finally Oudin's resonator. It is necessary to add that carbonic acid or compressed air is used to cool the electric spark as much as possible. The operator must know what conditions would be benefited by the reactions; and in the absence of the apparatus, permitting the dosage of the electric action to be gauged, one of the most delicate points in the technique arises.

What are the results of the spark system? The skin becomes ischemic around each spot upon which a spark has fallen and mortification soon follows, if the action is too prolonged. And here it would be well to emphasize that cauterization is not the object. The hemostatic and analgesic effects are remarkable. These are the immediate results. Subsequently and almost consecutively, a most important phenomenon supervenes—lymphorrhea. Immediately after the operation the dressings covering the wound are impregnated with a liquid, hardly red enough to be blood. This is yellow in color and serous, and the abundance and continuance of the flow are very variable. Rich in polynuclear cells, it is the first evidence of the defensive reaction of the tissues.

The abundant serous flow which follows "fulguration," prevents the immediate reunion of the wounds. The retention of this very septic fluid can cause the death of the patient. Therefore, it is incumbent on the operator to assure its free and uninterrupted egress by large and numerous drainages, to avoid any or all the grave phenomena of intoxication. This toxic lymphorrhea seems to be due to the infection of the wound at the moment of operation. The immediate reunion, which is impossible and dangerous to-day, will, in the course of time, when our knowledge is further advanced, be not only possible, but unattended by untoward results. The serous exudate which necessitates the changing of the dressings many times during the first twenty-four hours, stops altogether at the end of some days.

Ere long there appears on the wound a greyish or yellowish friable membrane; this is the eschar produced by a veritable sideration of the tissues, and not by cauterization. Before the eschar comes off, and especially at the time it is about to separate, there appear fleshy rose-colored elevations, which are velvety and elastic to the touch. They rapidly cover the vast losses of substance and the cicatrization of the wound sets in at once. The cicatrix, though hurriedly formed, is neither fragile nor keloidal. It consists of bands or nodules of fibrous tissue, the combined amount being much smaller than the loss of substance they fill in. The process of reconstruction of the tissues is truly incredible, irradiating to a certain distance and stimulating the lymphatic ganglia which are remarkably torpid. Although cicatrization is most active, there is an absence of infectious complications.

The electro-surgical method called "fulguration," ought then to occupy a right honorable position in the treatment of cancer. At a recent meeting of the French Society of Medical Electro-Therapy and Radiology,

M. Zimmern, in a report which was commended by his colleagues, supported the opinion of its worth and value. Although not in full accord with Dr. de Keating-Hart as to the details of the technique, he thinks that various writers, in particular the Germans, who are only partially satisfied with this method, have employed a defective operative method which should not be held responsible for their failures. He further contends that for him the great advantage of the new procedure is the formidable production of fibrous tissue, which destroys all the neoplastic tissue that somehow has eluded the knife and the sparks.

The results in cancer of the face are exceedingly brilliant, but when the mucous membrane is affected, they are hardly so gratifying. When the vagina, the uterus, and the rectum are affected, the definite results are variable; but even if "fulguration" does nothing else, it ameliorates some of the symptoms, especially pain. Many of the inoperable cases become operable, thanks to "fulguration," and the operable neoplasms are also helped by this method. "Fulguration" is an excellent auxiliary in surgical intervention, especially where cicatrization is desired. The surgeon ought to remove as much of the cancer as possible, and if nothing of the growth remains, "fulguration" will produce a rapid and solid cicatrization, which will cover the loss of substance in a manner unlooked for; if all the cancerous growth has not been removed, the production of connective tissue, under the influence of the sparks, transforms the remains of the active and florid neoplasm into a neoplasm that is torpid and indolent. Thus the limitations of the surgeon are considerably extended. When "fulguration" is properly done, it adds no risk to those other risks inherent in a surgical operation. Our thanks ought surely to be extended to Dr. de Keating-Hart for his perseverance in inviting the attention of the surgeons to a method that is very useful.

May 10.

OBITER DICTA FROM FOREIGN JOURNALS.

THE ART OF OBSTETRICS IN THE MIDDLE AGES.

Dr. Soalhat, in his Paris thesis, reproduces a very curious manuscript of the Middle Ages which is attributed to Maître Alebrand, of Florence, an Italian doctor who was attached to the court of St. Louis, and flourished at Troyes in 1270. This doctor was the first member of the medical profession who was courageous enough to deny the usefulness of the Latin tongue as a medium for expressing medical thought on paper; and in his advocacy and adoption of a vulgar language he went contrary to accepted tradition to so great an extent that severe criticism was visited upon him. But in the end he won out, and his manuscript, which Dr. Soalhat draws upon extensively, attests to his prescience that even a vulgar language has enough intrinsic value to make serious thought, such as medicine must always be, effective reading. The manuscript treats of puericulture, and not unlike other writings that date back a number of centuries, this special medical offering of the Italian doctor contains some quaint advice and naive observations, put forth in language of great simplicity. According to Alebrand, the pregnant subject ought to avoid all food that is not fresh, diuretics, and emmenagogues; she should eat little but often, and then only food that is easily digested; and she ought, especially, in the first and last months of pregnancy, to guard herself against giving way to anger, or engaging in work, thinking, and any endeavors that might result in fatigue; for these are unmistakably "traumatisms"! Baths should not be neglected but lengthy sojourns in the sun must be decried. A fortnight or three weeks before delivery, a regular treatment, that has for its object the easy egress of the child, should be instituted. Emollient sitz-baths followed by inunctions of the legs, thighs, and vulva, should be ordered, as well as wine with the addition of balsam; the latter only in case the patient is rich; otherwise, a decoction of the roots of costmary and artemisia will answer the same purpose. Besides all this Alebrand recommends sternutatories, the gentle (?) exercise of walking up and down many steps, and the use of perfumes on the genital parts to facilitate the drawing down of the womb! But the *clou* of all this remarkable advice is reached when he says that "in case the child does not lie in the normal position the services of a midwife to effect version are absolutely necessary."

AN INTERESTING CHAPTER IN THE HISTORY OF TRACHOMA.

In connection with Greef's recent discovery of a trachoma bacillus, the Vienna *Neue Freie Presse,* of April 7, publishes some interesting data which show that the national history of Austria is closely allied with an interesting phase of this disease, since it was at the battle of Aspern

that the celebrated oculist, Friedrich Jäger v. Jägersthal was incited to study and treat trachoma. The Austrian army was not overcrowded with physicians; hence, when Jäger was barely twenty-five he was appointed in charge of a field-hospital. During the first days at Aspern, he conferred with the heads of the medico-surgical departments of the French and German armies, Larrey and Assalini. The former on account of his arrogance made light of Jäger's knowledge, but the latter was kind and considerate and lent a willing ear to the young oculist's questions. Assalini had also accompanied the French army to Egypt so he was no mean authority on the subject of trachoma, and in his learned conversations with Jäger gave the history of the disease as it affected the French soldiers since the return of Napoleon to France, and its spread through infection among the Prussian soldiers after the battle of Jena, October 14, 1806. Jäger was so deeply interested in the matter that from now on he devoted himself to the study of the disease. When the Austrian troops invaded France it was Jäger who instructed them as to what precautionary measures to take to prevent infection. So great was his success, and so thoroughly had he enlisted the attention of the Austrian Emperor, Francis I., that his fame extended beyond the confines of Austria; and ere long King Frederick William III., of Germany, sent for him to effect similar desirable changes in the Prussian troops. In fact, it is to Jäger that all credit must be given for the widespread of this disease in the first and second decades of the nineteenth century, for every European army profited by his illuminating lessons.

THE SOCIAL RESPONSIBILITY IN MATTERS OF ALIMENTATION.

"Adulteration of commodities," says Dr. Vandevelde in a recent number of *La Clinique*, "is the outcome of the following causes: love of gain—an ambition inseparable from the fundamental thought of the human brain; competition which is so decidedly on the increase from day to day that it now amounts to a bitter warfare; progress of science which permits of the dissimulation that goes to the perpetrating of frauds with greater and greater ease; and finally—though we reluctantly admit it—the irrepressible and the unexplainable pleasure of thrusting a fraud upon the world." In fact, the ideas, which are paramount with regard to what constitutes alimentation and alimentary hygiene, are quite erroneous enough to invite the important question: Whether parents, when brought face to face with the problem of what they have effected in the way of alimentation for their children, or manufacturers and merchants with what they have sold to their customers, or competent authorities with what they have achieved in the cause of this important matter, would be in a position to show that their standard involved the best thoughts of social responsibility? From time beyond the memory of man adulteration has been in force, and at no period in the history of the human family has alimentation been uninfluenced by the arbitrary ideas which a falsity, born of a stupid and ignorant routine, made possible. But in an earlier period its untoward influences were not so extensive as to-day, for there were certain laws enforced in the dawn of what we moderns call civilization, that effectively combated its liberties and privileges. In Brabant, for instance, there existed a custom

in the Middle Ages that was both just and barbarous, the punishment for adulterating wine by an excess of water taking the form of amputating one or several fingers of the offending merchant, according to his repeated attempts at deception.

To-day the conditions which obtain in our communities are different from those which an earlier age knew; the inhabitants are crowded in spaces more and more encroached upon. Industry, by its enormous scope, has developed into a country's greatest asset; but though its strides are a source of pride to all, the momentous problem should not be forgotten that it lessens almost daily, by virtue of its growth, the hygienic conditions of populations in a truly deplorable manner. And this is why public opinion, abetted by the powers, has thought it necessary to intervene in an efficacious manner, so as to restrain adulteration and rectify the ideas which pertain to doing things in a routine way; thus hoping directly to protect the public health.

On account of this state of affairs, a number of general measures which, unfortunately, in certain instances, seem to have been enacted to limit the scope of industry, are really indispensable. The lack of the necessary knowledge is in general the fundamental cause of the defective situation of which we are about to speak. The "intellectuals" are devoted to their books and by their mental applicability are not only obtuse to demands which should engage their attention, but are making inroads into their constitutions by producing a low degree of physical resistance; while the amateurs, who are frenziedly occupied with their athletics, make much more of the development of their muscles than of the questions which should assail them. As for the workman, whether in the field or in the factory, he surely cannot be considered fortunate as regards his intellectual status. He may have had the benefits of an early school training, but may also have forgotten all he ever learned, or be altogether without this limited amount of intellectual help. The result is, that at an age when he ought to benefit, by instruction, from professional knowledge as to what he should do to conserve his own health and that of his family, his mind is unresponsive, and the fatigue which characterizes it, soon brings about a state of indifference.

Fortunate, indeed, are the people who consider instruction indispensable, and who find in science an excellent guide in the pursuits of industry and commerce; but fortunate also are the people whose component parts are not affected by mental instability and by the philosophy of brute force, and whose development harmonizes with the normal and practical resources of an advanced civilization so as to resist, in as successful manner, the inevitable undermining dangers which this sort of civilization stands for—a social condition that is artificial, if not false and contrary to nature, but necessary to the making and maintenance of modern society.

SOCIETY PROCEEDINGS.

ST. LOUIS SURGICAL CLUB.

Meeting of April 14, 1909.

Dr. George W. Cale read a paper entitled "A Case of Bence-Jones Albumosuria in Myeloid Sarcoma of the Humerus," for which see page 395.

DISCUSSION.

Dr. Willard Bartlett said that, from the macroscopic appearance, the x-ray picture, and microscopic view he had had, it occurred to him on first thought that it was a sarcoma originating in the marrow of the humerus. He only regretted that in cases he had seen in the past he had not examined the urine to determine whether a Bence-Jones urine was present.

Dr. R. L. Thompson said that this brought them into a very complicated and debatable field of pathology, i. e., groups of tumors arising from cells of bone marrow and cells of the lymphocyte series. Tumors having their origin from certain cells of the bone marrow that produced myelocytes were recognized by pathologists as three different types; first, simple myeloma, a benign tumor, which never gave rise to metastases and the cells of which did not penetrate and destroy surrounding tissue. After the removal of these tumors they did not recur. The second type, which this specimen resembled histologically, was the myelogenous sarcoma. This occurred first as a single tumor, the cells of which originated from the bone marrow. It might present a varied histological picture in the character and arrangement of the cells. There might be cells similar to myelocytes, but without the myelocytic granules. These tumors infiltrated surrounding tissue and gave rise to metastases and were always fatal. The third type was that known as multiple myeloma. That was a condition in which the Bence-Jones reaction was found. In this condition there were numerous tumors. Histologically, they could be classed benign tumors, but occurring in such great numbers they were not benign so far as the patient was concerned. These conditions were much akin to Hodgkin's disease. In comparison, Dr. Thompson spoke of tumors arising from lymphatic tissue. There was the simple lymphoma, an enlarged growth of lymphoid tissue. At the same time it was the idea of many men that the so-called Hodgkin's disease should be in this class. Then there was a condition where there was a general enlargement of lymphoid tissue and this condition was termed a pseudo-leukemia and from the discharge of these cells in the blood there was a lymphatic leukemia. The whole pathology of this subject was very complicated and nearly every writer who had described a case had written it up from his own viewpoint. Only recently had there been any attempt to put these things into shape. The most difficult thing the pathologist had to encounter was the examination of a piece of tissue sent in without any history of the case.

Dr. William S. Deutsch had hoped that something would be said of the pathological status of this special class of cases, as to whether the injury that had gone before could be considered a cause of this growth, or whether it was one of those cases where it was doubtful whether the injury had anything to do with the origin of the growth. Dr. Deutsch presented a specimen showing an osteosarcoma in which there seemed to be a throwing out of new

bone rather than destruction of tissue. In this case one of the best x-ray men made a diagnosis of syphilis, from the x-ray picture, but upon amputation of the limb and examination of the growth it was found to be sarcoma of the bone. It would be interesting to know whether Dr. Cale's patient developed further metastases.

Dr. Elbrecht thought the case exceedingly interesting, as the patient had been seen before the tumor had really developed; and that up to the present time it was limited to this one focus. This case should be followed because it had been seen so early, which fact bettered the prognosis. There was only one other case operated on very early, in which no metastases occurred, the tumor starting in the clavicle. One point brought out by Dr. Coley was that the majority of men who commenced using the fluid were somewhat afraid of it and that nothing could be expected unless it was given very heroically. He would like to hear results on this method of treatment from those present who had used it in such doses.

Dr. Kirchner had used Coley's fluid whenever he had had an opportunity and there seemed a possible chance for the patient. In the advanced cases, especially about the neck, he did not think much was to be expected. In three cases that had been followed, he thought he had noted some result from Coley's fluid. About a year ago a man had been operated on at the City Hospital and left with an apparently good result. Later he was again operated on and it was thought worth while to employ the fluid. While under treatment the tumor did not grow, but now, a year later, there was a recurrence and the patient had been put on the treatment again. Dr. Kirchner believed that the method should be employed in such a way as to get a reaction if a good result is to be achieved. The reaction was such that the patient was in a serious condition, with a very high temperature. The subject of myelogenous leukemia had been mentioned. He had a case of leukemia at the hospital, the patient being in a very desperate condition. Coley's fluid was tried with apparently good results so far as the blood was concerned.

Dr. Thompson said that by using bacterial toxin in animals it was possible to prevent the multiplication of cells through the exhaustion of bone marrow; therefore, if in these cases it were possible to exhaust the bone marrow cells this would produce an alleviation of the condition.

Dr. Willard Bartlett was reminded of an incident which occurred about ten years ago when he was doing autopsies at the City Hospital. The patient had been under the care of a surgeon at one of the college clinics. This surgeon had lanced what he believed to be an abscess and the patient had speedily bled to death. At autopsy it was found that the supposed abscess was one of these destructive tumors which had originated at the upper portion of the humerus. Dr. Bartlett also said that the first observation that erysipelas had any influence on sarcoma was made by Professor Nussbaum, in Munich, and the patient was his own son. Dr. Bartlett had Dr. Bernays' word for this. He could not recall in how many cases he had tried this fluid, but he had seen a possible good result in but one case. The Coley fluid and the x-ray were used together. The patient, a little boy, was afflicted with a rapidly-growing tumor, in the kidney region, which had increased visibly during the week before operation. When the abdomen was opened it was found impossible to turn out the tumor; it had spread along the pelvis and there were nodules everywhere. A portion of the kidney could be seen imbedded in the new growth. The child, removed home, improved enough for the employment of the x-ray and Coley's fluid. About five years later this child apparently was in fair health. The growth could still be felt but was smaller. What had held the tumor *in statu quo* he could not say; whether it was the x-ray which would probably not be very effective in such a deep growth, or the fluid, or both together.

Dr. Cale, in closing, said that the pathology of this matter is what interested him particularly. Most of the cases reported with Bence-Jones albumosuria were multiple myelomas, while this is a myeloid sarcoma.

BOOK REVIEWS.

THE EARLY EDUCATION OF CHILDREN. By Laura L. Plaisted. 398 pages. Henry Frowde, M. A., Publisher. Oxford University Press, New York, American Branch.

Though primarily intended to be a book for teachers, this volume will prove to be of considerable interest to the medical profession. The book is the outcome of many years' experience in teaching children and in training young teachers; it incorporates the results of careful study of kindergartens and lower class schools of England, France, Germany and America. Of special interest to the reviewer is the chapter on "The Medical Responsibilities of School Teachers," by Dr. Ormerod.

TEXT-BOOK OF OPERATIVE SURGERY. For Practitioners and Students. By W. S. Bickham, M. D., Surgeon to Touro Hospital, New Orleans. Third Edition. Greatly enlarged. 1206 pages, 854 illustrations. W. B. Saunders & Co., Philadelphia and London.

This is one of the most satisfactory text-books that has appeared in recent years, particularly in this latest edition, which has been most thoroughly revised, but has retained all the excellent features of the original. The development of a text-book is dependent on its reception by the profession and the industry and knowledge of the author, who in the subsequent editions has an opportunity to make his book of a character that lives. Thus the value of this volume is largely due to the uniform revision that has covered the former editions and made the present volume a complete and well classified exposition of the best of modern surgical methods, put in a form at once interesting and accessible.

PATHOGENIC MICROORGANISMS, INCLUDING BACTERIA AND PROTOZOA. By William Hallock Park and Anna W. Williams. Third Edition, thoroughly revised. Lea & Febiger. New York-Philadelphia. 1908.

Park's book in its two former editions has already been reviewed by us and its superiority over the usual routine manner of dealing with the subject was mentioned. Although the change in the make-up in the third edition of this book is considerable, it deserves the same praise that it received before. Especially valuable is the impartial dealing with the opsonic index mania, showing by circumstantial evidence how suspicious we should be of it. Doubts must be entertained about the positive assertion made that the Negri bodies of hydrophobia are protozoa or microörganisms of any kind. The evidence given by Miss Williams is not conclusive, as can be shown by methods of staining much superior to the ones she uses. Cases are known of typical hydrophobia, where no bodies or even suspicious formations could be found in any portion of the brain or spinal structures; neither in smears nor in sections where inoculation was positive. The number of Negri bodies is not always plentiful, but never is the amount so small that smears will not show them; even in sections they are found only singly in each ganglion cell. A negative finding in smears is not exclusive, as Miss Williams herself asserts. The rule is that only comparatively few bodies are found in a smear, and often it takes an hour to find a single typical one. More differential methods than the one Miss Williams pursued suggest in no way a living structure; and the nuclear character of the central and other granules cannot be proved by histologic methods. They are, like the formations in variola, specific degenerative products of cytoplasmic or nuclear changes.

A TEXT-BOOK OF THE PRINCIPLES OF ANIMAL HISTOLOGY. By Ulric Dahlgren and Will A. Kepher. New York: The Macmillan Co. 1908.

Text-books on histology are written in sufficient numbers by men who are competent to treat the subject; therefore, the supply of all possible information should suffice for some time to come. In spite of this fact, and the reluctance of granting a new book on histology any practical value and importance, the book of the authors quoted above must be viewed as a very important addition to the literature. All text-books on histology deal mainly with human his-

tology, but the scientific conception of histology and comparative histology has never been demonstrated in its real character before. The authors have given a picture of histology, comprising its general field and, moreover, do not restrict it to human and mammalian forms. They intended to produce a guide treating histology as a pure science; they have admirably succeeded in this attempt and the book is undoubtedly an invaluable addition to text-books on histology. It must serve, as the authors assert, as a broad foundation for future studies of morphology and embryology as well as for medical studies. For the fundamental principles even vegetable histology is utilized. The illustrations are exceedingly numerous and excell in definiteness and clearness anything hitherto published. The book ought to have a wide circulation so as to advance the study of histology.

A Text-Book of General Bacteriology. By Edwin O. Jordan, M. D. W. B. Saunders & Co., Philadelphia and London. 1908.

The author's effort in writing this book was rather to make bacteriology more of a general biologic part of science than to lay stress on its detailed dealing with only the bacteria. He has succeeded in giving an excellent representation of bacterial life and its relation to all sides of human life. The reading of the book is a pleasure, although, of course, nothing new or original is advanced. It is intended to initiate the student of bacteriology into a higher conception of the meaning of his work; a commendable procedure, be it added. But to do this, a detailed familiarity with the manifold sides of the differentiation of different bacteria requires a more systematic though less interesting representation. This will, however, always remain the basis for scientific work in bacteriology; therefore, books as interesting and fascinating as is this one by Jordan are not for students, but for men who have mastered the basal experience in bacteriologic work and desire further to be introduced into the general meaning of bacterial life demonstrable by this experience.

A System of Operative Surgery. By various authors, edited by F. F. Burghard, M. S. (Lond.), F. R. C. S. (Eng.), Teacher of Operative Surgery, Kings College, London, etc. In four volumes. Vol. I. London: Oxford University Press.

This, the first of four volumes, covers a field that has been well handled in the past few years, in America at least by two excellent systems, and yet it will be welcomed by all interested in a thorough treatise on operative surgery, as representing the ideas of those foremost in English surgery. It has a further merit, of being "eminently practical," encyclopedic, but not tiresome with needless details. The contributors are representative of England's best and the work throughout the first volume has the characteristic that we associate with the best style and expression of British authorship.

The chapter on the "Principles and Technique of Wound Treatment" is by Lockwood, who advises practical and efficient measures. It is a little surprising to learn that he still continues the use of marine sponges, but his technique otherwise is similar to that generally employed in America. The methods of local anesthesia are given in a chapter by Houghton, which is one of the best in the book, being most thoroughly illustrative of a method that is fast becoming an indispensable attainment of every surgeon. The author has devised several infiltration adjuncts and has had much experience. Spinal Anesthesia is given a complete chapter. Burchard has contributed two sections, one on "Amputations," another on "Ligature of Arteries," which are well done, but seem too extensive and detailed for such a work. Amputations through the extremities are performed in much the same way, no matter what part is removed, and general rules would suffice in most instances. Ligature of vessels is made to include an extensive review of anatomy, which could easily be much curtailed. On the other hand, we find much to praise in the chapters dealing with "Arteriorrhapy," "Endo-aneurysmorrhaphy," "Aneurysmal Varix," and "Operations on the Veins."

The section dealing with "Operations Upon Nerves" is most instructive, particularly on nerve suture. The removal of the Gasserian ganglion is described in the section dealing with the operations on the cranial nerves, the author describing very well a modification of the Cushing technique as that operation was done some time back. The editor also deals in an instructive and easily followed description with operations in non-tuberculous affections of the bones and joints. An excellent chapter by Legg gives the general principles and special applications of Plastic Surgery. The volume is well printed and sufficiently illustrated by good cuts.